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APRIL 1953

American Engineer

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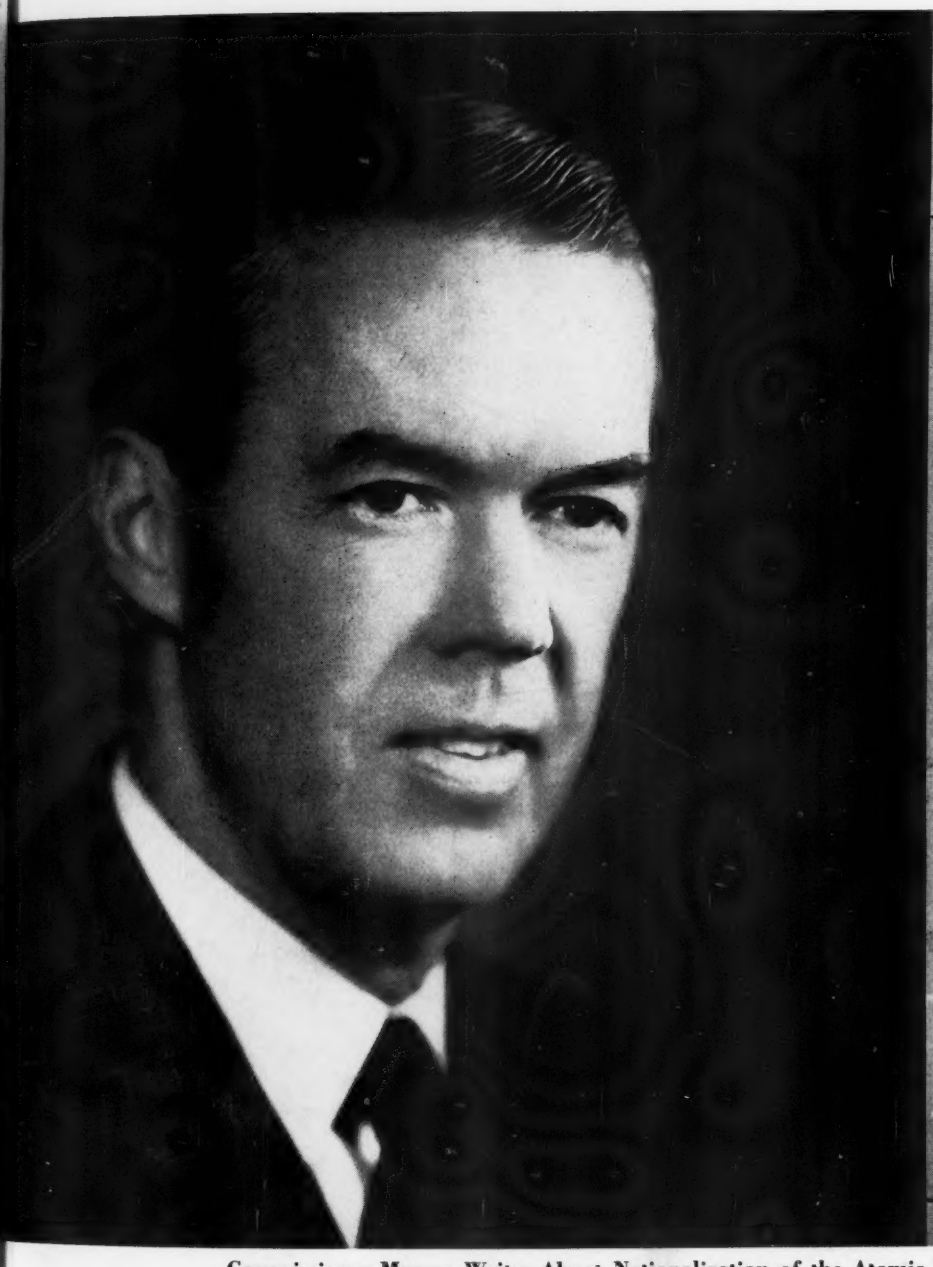
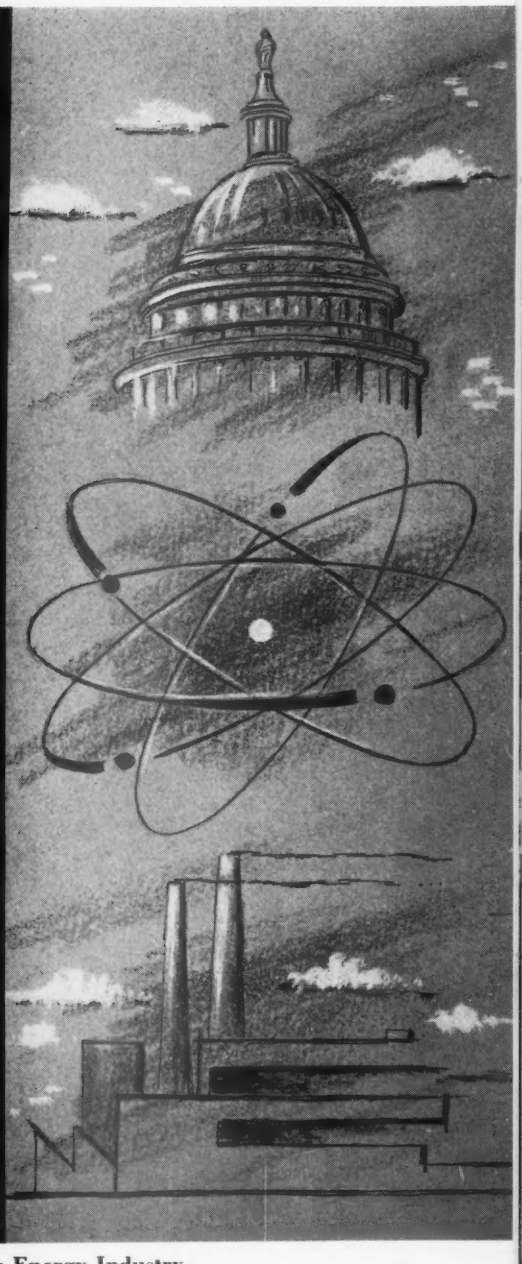
● **ARE YOU READY FOR SEVEN (b) DAY?**

By Thomas E. Murray, P.E.,
Commissioner, Atomic Energy Commission





Commissioner Murray Writes About Nationalization of the Atomic Energy Industry

. . . *Also*

n Engineering Fish Story —An American Engineer Photo Story—

●

How Important Is Graduate Education?

●

The Threat of Unionism In the Engineering Profession

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Letters

Steinman and Arcs . . .

Dear Editor:

Regarding my recently published poem "Suspension Bridge" (AMERICAN ENGINEER, February, 1953), I wish to acknowledge the complimentary comment by J. G. Moore, P.E., in your March issue. In his pointing out an apparent technical inaccuracy or "poetic license," however, he happens to be wrong. Because he is repeating a common popular error, I wish to record the correction.

If you hang a light chain, or a rope or wire, between two supports, it will hang in a natural curve, called a *catenary*. If you hang some weights along the cable, the curve will change shape. If these weights are distributed uniformly in horizontal spacing, the curve will be a *parabola*. Actually the cable of a suspension bridge is an intermediate polygonal curve, but it is more nearly a *parabola* than a cantenary.

D. B. STEINMAN, P.E.,
New York, New York.

Safety Valves . . .

Dear Editor:

Please refer to the article, "The Human Factor in Engineering Work," in the February issue of AMERICAN ENGINEER.

The author mentions the fact that "Emotions are like safety valves. If you block them off, it's like tying down the safety valve—you create enormous pressures. For example, if you think the boss is a no good so-and-so, go ahead and think so without trying to repress your thoughts."

By the same principle, then, it would not be healthy to repress the emotion of hate. (A good motive for murder!)

He also invites one to "Behave in an acceptable manner regardless of the thoughts." However, this is against the nature of man, who has a mind and a soul as well as a body.

External behavior is controlled by internal thought; "The thought is father to the deed." An uncharitable thought does harm to the soul of the thinker and, carried into action, does harm to the one toward whom it is directed.

Would it not be better to forgive the faults of our bosses and fellow workers? The "enormous pressure" could then be redirected into the "safety valve" of a charitable prayer or deed on their behalf. Remember, none of us are perfect!

I thought the rest of the article was exceptionally good.

ERNESTO PIERSON, P.E.,
Wichita, Kansas

Good Neighbors . . .

Dear Editor:

During January Mrs. Rosenthal and I visited Puerto Rico and there we met with Mr. Hernandez, President of the Puerto Rico Society of Professional Engineers, and his gracious family.

Mr. Hernandez and his family made our stay in Puerto Rico most pleasant. Together we visited many of the interesting sights and several of the completed engineering projects.

(*Continued on page 5*)

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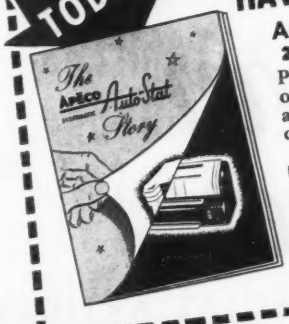

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American Engineer

APRIL, 1953

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WALTER L. CISLER, *President, Detroit Edison Company.*

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NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

Letters

(*Continued from page* 3)

A special meeting of the Professional Engineers was arranged and we had the outstanding pleasure of meeting the Puerto Rico Professional Engineers and their wives.

Since we had such a pleasant stay in Puerto Rico, I take this opportunity to pass this information along to you and mention that Mr. Hernandez surely did welcome us to his fair island.

JOSEPH A. ROSENTHAL, P.E.,
Newark, N. J.

Fonde Case . . .

Dear Editor:

The first article in the February, 1953, issue of The AMERICAN ENGINEER concerning Tennessee's Fonde case has aroused the writer's interest. To one who has followed the case, the court's decision points to the interpretation which has been placed upon a particular statute having its own peculiar wording and background. But your headline and the handling of this newsworthy item implies that what has happened in Tennessee is also likely in any other state of the Union. Such an impression would be incorrect, and may lead to the embarrassment of both professions, possibly to legal condemnation of either architects or engineers who assume that there is complete reciprocity between the professions.

The writer practices both as an architect and as a professional engineer, having obtained registration in each profession by written examination, and is actively engaged in the A.I.A. and his local and state chapters of N.S.P.E.

The manner in which your article on this inter-professional case has been written and published has done much to destroy the inter-professional unity which our joint efforts have been able to build up over the past five-year period. This is particularly unfortunate since Allison Neff, Chairman of the Publications Committee, was one of the first leaders in the current unity movement.

It is interesting to note that Tennessee has an excellent school of engineering, but none teaching architecture; that T.V.A. is considered one of the century's great engineering accomplishments, to which men like Architect Roland Wank contributed so much to the economy of design as well as the improvement of aesthetic qualities in T.V.A. work. Since all architects are "out-of-state trained" for Tennessee practice, it is not surprising that both the law and the local sentiment would consider the two professions in one general grouping. Fortunately for the public good, there is a difference, and the laws of most states draw the line of distinction.

Basically, the Architect is trained in the solution of problems related to HUMAN NEEDS, while the Engineer is trained and qualified in solving material problems by the application of SCIENCE AND MATHEMATICS. In his qualifications for the practice of Architecture, the candidate is examined in the fields of history (which is the record of human needs, experiments and accomplishments), in the principles of art and aesthetics (which are the application of light, color, sound and pattern to the human senses and emotions), community and environmental planning, professional ethics, and also in the fields of applied engineering in the structural, mechanical, sanitary,

(*Continued on page* 40)

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Engineering and Research

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Professional News in Capsule Form

Salaries for Engineering Executives Reported ● Dr. Gustav Egloff Receives Washington Award ● Excellent Prospects Ahead for College Grads ● New Sloan Foundation Engineering Scholarships Inaugurated ● Other Items of Interest

The salary average for top engineering executives in companies worth $5 to $25 million in sales dollars is $14,800 per year. For companies of $25 to $100 million it is $25,250, and for companies of the $100 to $500 million size the salary average is $34,350. Companies using bonuses and pensions in addition to regular salaries were included in the computations which were made by the American Management Association for the period covering fiscal 1951 and extending up to midyear 1952.

* * *

NSPE member, Dr. Gustav Egloff, a world famous petroleum scientist and director of research for the Universal Oil Products Company, Des Plaines, Illinois, has recently been presented with one of engineering's foremost honors — the Washington Award for 1953. Dr. Egloff's citation is "for distinguished leadership in petroleum research and development in professional activities and in community services."

He holds more than 300 patents on inventions covering the processing of oil, coal, shale, and other chemical derivatives of hydrocarbons and is the author of 11 books and more than 600 articles relating to this field.

The Washington Award, an honor conferred for accomplishments which promote the happiness, comfort, and well being of humanity, is given upon the recommendation of a commission representing leading national engineering societies.

* * *

Industry's scramble for top college graduates will be even more hectic in 1953 than it has been in the past, according to the executives of 195 leading companies recently quizzed on the prospect by the National Industrial Conference Board.

The research agency's findings showed that the average monthly salary being offered to A.B. graduates in 1952 was $293, while for engineering graduates it was $309. The average figures now reported for 1953 are $308 and $334 respectively; and, with wage controls removed, indications are that the bidding may go even higher.

* * *

A new series of four-year scholarships has recently been established by the Alfred P. Sloan Foundation, providing annual grants from $200 to $2,000 for students in the fields of engineering and science. The awards are designed to send young men and women with exceptional scientific capacity to four of the country's leading technological schools, Alfred P. Sloan, Jr., chairman of the General Motors Corporation and president of the Foundation, said in making the announcement of the grants.

The scholarships will be available at the Cornell University College of Engineering, Ithaca, N. Y.; the Massachusetts Institute of Technology, Cambridge, Mass.; the California Institute of Technology, Pasadena, Calif., and the Carnegie Institute of Technology, Pittsburgh.

Twenty-five awards are being made for the 1953-54 school year, and twenty-five others will be added in each of the following three years until the total of 100 scholarships is reached. The Sloan Foundation plans to set aside $200,000 annually to administer the program. In addition to the student aid, the colleges where the scholarships are offered will receive yearly allotments to cover the cost of educating the foundation scholars, without an added burden on their general funds.

* * *

Two NSPE members, both on the faculty of the Illinois Institute of Technology, are among the group now making plans for the ninth annual meeting of the National Conference on Industrial Hydraulics to be held next October 8 and 9 at the Sherator Hotel in Chicago. Frank W. Edwards, director of Illinois Tech's Department of Civil Engineering, is serving on the committee of Conference Director Otmar E. Teichmann; and John G. Duba, assistant professor of civil engineering, is the Conference secretary.

Mr. Teichmann is on the staff of the Armour Research Foundation of Illinois Tech.

* * *

Brigadier General Bernard L. Robinson, who has recently been appointed Army Assistant Chief of Engineers, will also serve as chairman of the Board of Engineers for Rivers and Harbors, according to an announcement recently made by Major General S. D. Sturgis, Chief of Engineers.

* * *

A campaign for the shipment to Israel of about 2,000,000 technical and scientific books was begun recently by the newly organized Books for Israel association, which has set up headquarters at 250 West 57th Street in New York City. Books dealing both with pure science and with engineering and other applied sciences are particularly needed by the country's institutions of higher learning. Rudolf G. Sonneborn is chairman of the project, which has the approval of the International Information Administration of the U. S. State Department.

* * *

The latest ideas in purifying the air over the nation's cities are being adopted by industry at the rate of $120,000,000 per year, according to a report made by R. T. Griebling of the Air Pollution Control Association be-

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fore a recent Air Pollution Abatement Conference in Detroit.

Other authorities in the field told the assembled regulatory officials and industry representatives that keeping the impurities out of the air over metropolitan areas is one of the most complex problems faced by engineers today. Every trick known to engineers, physicists, meteorologists, and chemists is being used to cut down contamination from industrial operation; but only gradual improvement can be expected, it was pointed out, mainly because each regional problem has to be studied individually. It was agreed that the ultimate answer to the problem lies in more research rather than in imposing more restrictions on industry.

* * *

Herbert N. Eaton, an expert in the fields of hydraulic engineering and aircraft instrumentation, has recently retired as chief of the Hydraulics Section of the National Bureau of Standards, which position he has held since 1928.

* * *

Federal agencies spent $1,839 million on scientific research and development during the fiscal year 1952, according to a recent release from the National Science Foundation. The corresponding estimate for the 1953 fiscal year is placed at $2,189 million. Amounts included in the proposed budget, presented on January 9 by former President Truman, total $2,327 million for the fiscal year 1954. These preliminary estimates are compiled by the NSF with the cooperation of the various other Federal agencies engaged in research and development activities.

Funds administered by the Department of Defense made up about 72 per cent of the total for 1952, compared with 14 per cent for the Atomic Energy Commission, 4 per cent for both the National Advisory Committee for Aeronautics and the Federal Security Agency. Twenty other Federal agencies accounted for the remaining funds.

* * *

A moratorium on scientific progress for a period even as short as fifty years could throw mankind back into a Dark Age existence, according to Dr. Charles Allen Thomas, president of the Monsanto Chemical Company and chairman of the board of the American Chemical Society. Dr. Thomas made this comment in a speech before the American Section of the Society of Chemical Industry at a recent Waldorf-Astoria dinner meeting during which he received the 1953 Perkin Medal of the Society. He was honored for his contributions to the chemical technology of automotive fuels, catalysts, and atomic energy. The Perkin Medal award, established in 1906, was named for Sir William Henry Perkin, discoverer of the first synthetic dye.

* * *

NSPE Urges P.E. Exemption From Wage-Salary Curbs, Robbins Tells Committee

If Congress enacts a stand-by control law, the exemption of professional engineers from wage and salary controls should be continued, NSPE told the Senate Banking and Currency Committee at a recent hearing. The Senate Committee has been holding hearings on a proposal of Senator Homer E. Capehart, (R., Ind.), chairman of the Senate Committee, to provide a price and wage control law to be brought into effect only if a new national emergency should arise which requires such action.

The present control act, while still on the books, is of little significance since President Eisenhower has terminated all wage and salary controls and practically all price controls. It did, however, contain an amendment endorsed by NSPE in 1952 which exempted wages and salaries of all professional engineers employed in a professional capacity.

NSPE Executive Director Paul H. Robbins told the committee that should another emergency arise which might be accompanied by a new control law it would be of paramount importance that the engineering force of the nation be in a position to transfer its vital function to defense production without hampering conditions which would confuse and delay such a transition. "In the long run, we believe it will be found that a flexible condition applicable to the engineering profession will result in the most economical and efficient means to speed vital defense production and develop the better weapons which will be needed. A controlled, stratified, and strait-jacketed engineering profession will not be able to do the job as well or as economically," he said.

Robbins pointed to the problem faced by the smaller engineering firms

(*Continued on page* 39)

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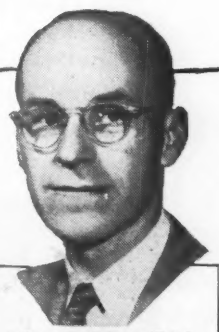

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UNITY FOR PROFESSIONAL ACTION

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

OVER the past two years there has been much discussion on the subject of unity in the engineering profession. It will be recalled that representatives of 15 of the major engineering societies spent this period of time discussing ways and means of obtaining greater professional unity. Their report resulted in the presentation of four plans which have been discussed by various segments of the engineering profession. Yet, it is discouraging to find that in various areas there is little concern for the problems of professional unity. In other areas where the discussion waxes hot, a great deal of time is spent on the details of such a unity organization.

Unfortunately, many of these discussions fail to indicate an appreciation of the basic reasons for unity and some of the basic elements which should go into a unity organization to be effective in handling the objectives for which it might be formed.

The need for unity can be summed up very simply. It is to provide the engineering profession with a vigorous body for the most effective professional action. Professional action, however, means varying things to various individuals. It may mean concern with the economic status of the profession; it may mean ethical procedures; it may mean governmental liaison; it may mean legislative representation; it may mean enforcement of our registration laws; it may mean better education; it may mean concern for the utilization of engineers in the Military Services; it may mean a public relations program for the profession; or any one of a number of other specific activities.

But basically it has two meanings. It means improved public service (the hallmark of a profession) and it means greater recognition of the professional status of engineering. Now these two items have certain common distinguishing features. First of all, they apply not to any particular unit of the engineering profession—they are the concern of all engineers, whether they be Civil, Electrical, Mechanical, Chemical, Mining, or some other specialized branch. They apply to the whole of the profession irrespective of the type of engineering pursuit—whether it be in private practice, employment in industry, public utility, education, or government. The other common basis of this activity is that both the public service and the recognition of the profession are made up to a large degree of what the individual members of the profession do with respect to them. For our neighbors and our friends, the engineering profession is judged by their impression of each of us.

Thus, this professional action can only be coordinated and stimulated by a unity organization. It receives its impetus and becomes effective only as the individual members of the profession will support it with their time and their money, and support it with their active participation.

Believing firmly in these principles, NSPE has stood out in these unity discussions for certain basic requirements. Among them has been the very basic one that the unity organization should be composed of individual dues-paying members. Recognizing from experience that these professional activities (legislation, ethics, public relations, etc.) have their greatest effectiveness when implemented primarily at the local level, with coordination and further implementation at the state level and stimulation and activity from the national level, NSPE has stood staunchly for the necessity of organizing and integrating the engineering profession at three levels rather than at the national level only.

It has further said, and it knows from experience, that the unity organization must have authority to act and it must have appropriate financing. No unity organization can be successful if it is supported at the whims of various organizations, either by way of financing or by way of participation in particular programs. NSPE has further stood out as saying that we must decide who is to participate in this unity organization and limit it to qualified engineers. Experience of the past 50 years on professional matters has indicated the wisdom of these points of view. We can look at the experience of the American Engineering Council as indicative of the failure of an organization which did not have these basic concepts. We can see the success of organizations in other professions and our own based upon these principles and we can note with pride the success they have attained.

NSPE has thus taken the position that the unity discussions should first consider the basic elements of desirable organization. Following agreement on these, the details of organization can be worked out to attain the objectives and kind of effective professional action all members of the engineering profession desire.—*End.*

An *American Engineer* SPECIAL REPORT

Re: ***Engineer Employment, Education, and Income Survey Conducted for the Department of Defense***

● The National Society of Professional Engineers was one of eighteen professional associations that cooperated in a 1949-50 "Survey of Selected Engineering Personnel" conducted on behalf of the Department of Defense. Replies to the questionnaires distributed during the study were tabulated and analyzed by the Bureau of Labor Statistics in cooperation with the National Scientific Register, and the final results of this statistical analysis have just recently been made public in a Department of Labor report.

The primary aim of the study was the estabilshment of a source file of qualified senior engineers which the Department of Defense and other Government agencies could use in recruiting engineering personnel. Employment, education, and income were the three items with which the survey was chiefly concerned.

Questionnaires were mailed to approximately 97,000 members of the various participating societies and to about 19,000 nonmembers. A total of 63,689 replies were received; and, after a weeding-out process, the BLS analysis was ultimately restricted to the questionnaires returned by some 55,000 of the nation's experienced senior engineers, admitted to full professional membership in their respective organizations.

These engineers constituted about one-eighth of the entire profession in the United States. The report emphasizes, however, that the group is select rather than representative and that relatively few men under 35 are included. This latter is due to the fact that many societies have several grades of membership and require that certain levels of age and experience be reached before full membership recognition is accorded.

The largest age group represented was from 35 to 49 years, with more than half of the respondents fitting into this span. The median age was 45, whereas 1949-50 estimates for the entire profession set it as under 40. There were only 56 women among the 55,000, showing very small headway made to date in their employment in the engineering field.

The current analytical report represents the most recent completed survey of the engineering profession since the 1946 BLS study, also made in cooperation with the engineering societies plus the National Roster of Scientific and Specialized Personnel. The findings are interesting and are illustrative of many occupational trends among established P.E.'s. In considering them, however, it should be borne in mind that, since the bulk of the questionnaires were returned by the end of 1949 and since the last "stragglers" were rounded up by August, 1950, dislocations, changes, and other factors directly contingent upon the Korean War and the more serious emergency situation are not reflected.

For this reason particularly it is expected that the current NSPE Salary and Income Survey will fill a very serious gap in current knowledge of the engineering profession.

Areas of Employment

● The vast majority of the persons covered in the BLS study were employed in engineering positions. A small group, however, constituting only two per cent of the total number reporting, were engaged in nonengineering work, although they considered engineering to be their field of highest competence. Half of these were doing scientific work, while the others were employed in a wide variety of nonscientific jobs. Only 196 out of the 55,000 were unemployed at the time the survey was made.

The proportion of the surveyed engineers employed in the largest branches of engineering was similar to estimated figures for the profession as a whole. Thus, in 1949 mechanical engineering employed the largest group—approximately two-fifths, while civil engineering accounted for the second largest group of respondents, or about one in four. The mechanical engineering employment classification included figures for specialists in the closely-allied aeronautical, automotive, marine, naval architecture, ordnance and armament, and power plant fields.

Electrical, mining and metallurgical, and chemical engineering accounted for much smaller proportions of those surveyed, and their survey percentages do not match the corresponding estimates for the entire profession. The BLS, however, indicates that this may be due partly to the fact that society

—Please turn the page—

(Continued from page 9)

membership is more common in some branches of engineering than others and partly to a larger coverage in some fields.

The proportions of engineers employed at the time of the survey in the various branches of the profession corresponded quite closely with the proportions who regarded those branches as their fields of highest competence. This held true not only for the mechanical, civil, chemical, mining and metallurgical, and electrical branches but also for most sub-branches.

There were, of course, some exceptions, noted particularly in the new and growing fields of guided missiles and nuclear reactor engineering where personnel were being drawn extensively from other areas. Also, the figures for those regarding aeronautical engineering as their first competence were larger than actual employment statistics, possibly indicating that some men, who had become skilled in that field during World War II, had been forced to transfer to other jobs because of the postwar slowdown in aircraft production. But this again is one area in which there probably has been a reversal since the outbreak of Korean hostilities.

The possibility of any substantial and effective shifting to fields of second or third competence to swell the ranks of radar, explosives, and welding specialists in the event of an even more serious emergency situation could not be conclusively demonstrated by the statistics assembled in the survey.

Also, twelve per cent of the total number belonged to a military reserve organization; and among the younger men included the proportion was much higher, definitely indicating that a problem of first magnitude would be created for industry in the event of a general call-up of reservists.

Education

● The educational background of the 55,000 senior engineers was not significantly different from that of society members of all grades who were included in the earlier 1946 survey of the profession. Of the engineers in the 1949-50 study, 60 per cent held bachelor's degrees only; 20 per cent had graduate degrees (4 per cent with Ph.D.'s and 16 per cent with a master's or equivalent professional degree); while the remaining 20 per cent held no degrees, although most of them had some college credits. Only 7 per cent had never been to college.

Two out of every five doctoral degrees were in fields other than engineering. However, all but 5 per cent of the baccalaureates and 12 per cent of the master's degrees were restricted to the engineering field.

Both in 1946 and in 1949-50, the proportion of engineers with graduate degrees was smaller in the profession as a whole than among society members. But because of the growing emphasis on graduate training for many types of work, the advanced degrees can be expected to show up more frequently in the future. In the 1949-50 study, the mechanical and civil engineering groups had the lowest ratios of graduate degree holders.

Also, because those persons who have qualified as professional engineers without any college degree are predominantly in the older age groups, the 1949-50 survey probably included a disproportionately large number in this category, since the thousands of young men who have entered the profession more recently, but who are not as yet full professional members of engineering societies, are predominantly engineering school graduates.

Conditions of Employment

● The men covered by the survey, with the exception of civil engineers for whom the government is more frequently a major source of employment, were found predominantly in private industry. Two out of three were employees of private business organizations. Furthermore, one out of every ten was himself an employer or owner of a business or else an independent consultant. However, in comparison with the 1946 study, the 1949-50 one showed a slightly larger percentage of engineers in government work and a slightly lower percentage of self-employed.

Private industry was shown as somewhat less dominant for those with graduate degrees than for those whose scholastic training stopped at the bachelor's level; but, nevertheless, almost half the Ph.D.'s worked for private firms and only slightly over one-third were with educational institutions.

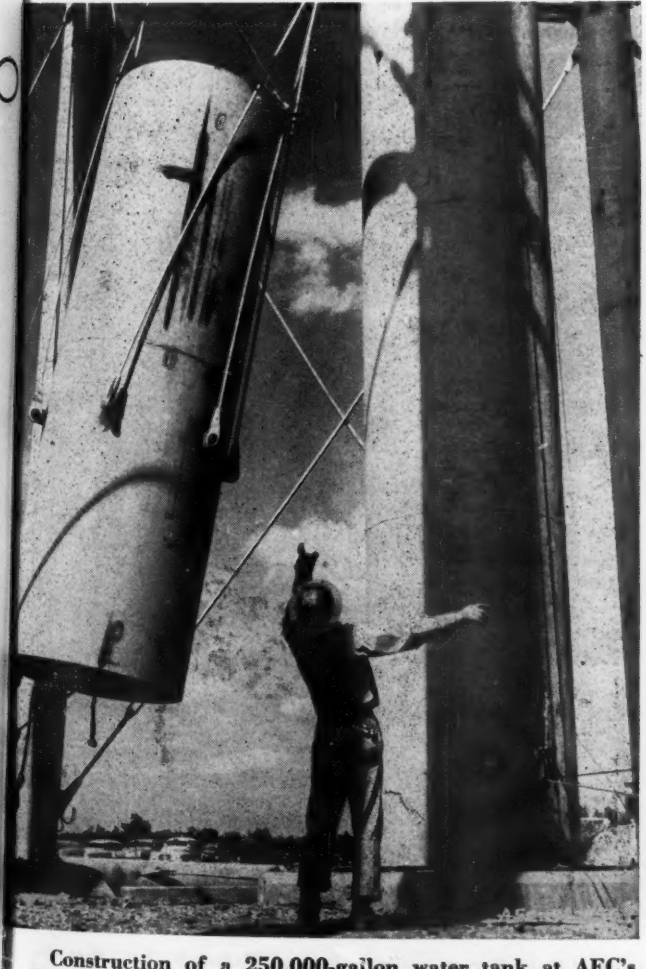
Design was the function performed by the largest group of the society members surveyed, with

—Please turn to page 28—

ARE YOU READY FOR SEVEN (b) DAY?

By THOMAS E. MURRAY, P.E.,
Commissioner, Atomic Energy Commission, and Member, NYSSPE, and NSPE

Will the Atomic Energy Industry Be Nationalized Or Will Private Enterprise Have An Opportunity Someday to Take Over? Read This Provocative Account By a Distinguished Engineer and AEC Member.



Construction of a 250,000-gallon water tank at AEC's Paducah, Ky., plant. It will stand 175 feet tall when completed.
—Photo by Westcott.

IT is almost three years since I became a member of the Atomic Energy Commission. Shortly after assuming this responsibility, I met an old friend. He seemed to regard me more with an attitude of sympathy than with one of congratulation. Instead of felicitations, he proceeded to give me a short sermon on socialism as exemplified by the Atomic Energy Act of 1946. It was my friend's notion that the sooner the Commission closed up shop and went out of business, the better. He feared that the Commission's activity would be the greatest single factor pointing towards nationalizing all the primary means of production in the United States.

I must confess that since that time my friend's worry has, to some extent, become my own worry—at least, until a few months ago. While wrestling with a major production problem, I telephoned the president of one of our largest contractors. I asked to see him on a matter of grave importance to our atomic program. Bluntly he told me that he preferred not to do this unless I stated my business in advance. In his company, he emphasized, problems came up to him from his own organization and not directly from Atomic Energy Commissioners. Putting down the phone with a vague sense of personal deflation, I could breathe a sigh of relief, for he had made it clear to me that the Atomic Energy industry had not been nationalized, at least not as yet.

And one of the things that should keep it from ever being nationalized is the advent of a day I will call "Seven (b) Day." I take the designation from Section Seven (b) of the Atomic Energy Act, from which I quote: "Whenever in its opinion any industrial * * * or other non-military use of * * * atomic energy has been sufficiently developed to be of practical value, the Commission shall prepare a report to the President stating all the facts with respect to such use, the Commission's estimate of the social, political, economic and international effects of such use and the Commission's recommendations for * * * supplemental legislation. The President shall then transmit this report to Congress, together with his recommendations." It is obvious from this quotation how important "Seven (b) Day" is going to be. When that day arrives the citizens of the United States, through their representatives in Congress, will have to decide whether or not to permit private ownership of nuclear power reactors.

Much has already been said about how near or far is the corner around which lies economic as opposed to feasible atomic power. I won't add to this speculation. But right at the start let me sound a note of caution. Although some interim legislation will be needed to permit private work to move ahead in the nuclear power field, don't look for any legislative panacea for our atomic industry's technological growing pains. There is an unhealthy tendency to sublimate the immense technical problems in the path of economic nuclear power into complaints about legislative obstacles. However, it is possible that introduction of interim legislation will raise some of the issues I intend to touch upon in this article. In this event, the time for solution of these problems may be closer than is generally thought.

Leaving aside any detailed review of legislation, what I should really like to discuss is the ultimate place of peacetime power reactors in our economy. This is a matter of great importance, second only to our mammoth

problem of keeping ahead of Russia in the atomic arms race. Our stockpile of atomic weapons must, as a matter of priority, be improved and expanded far beyond its present size. It has and must ever stand as a warning to any aggressor. This program we will continue with persistence. However, international events have taught us that there is no long term security in weapons alone. At best our present atomic stockpile permits us only to hold communism at bay. Our only long term security lies in the ability of the free world to demonstrate conclusively that its ways of life—spiritual, social, political and economic—are better for human beings than those offered by Soviet communism or by any other form of totalitarianism. One of the ingredients of success in this struggle for men's minds and hearts is the continued healthy development—politically and economically—of the virtues of the dynamic and free American system. On this, together with international good will and the vindication of spiritual values, western civilization depends. Industrial power is the heart in the body of that system and our ethical and our religious heritage is its soul.

ALTHOUGH the work of the Atomic Energy Commission is carried on in plants operated by private contractors, we must not therefore conclude that everything is in order—that the new giant industry is safe in the camp of private enterprise. For the most part, the Atomic Energy industry, like nationalized British industry, is state owned—and controlled by government employees. The recent English Labor Government, in nationalizing a number of industries, was simply putting into practice a fundamental principle of socialism, namely state ownership of the means of production. Although the American justification for government ownership was not derived from the application of such a rigid dogma, nevertheless, the end result was, in an essential respect, identical—State monopoly. That result is out of joint with the rest of the American industrial structure. It is even out of joint with one of the basic purposes of the Atomic Energy Act itself, which was to foster free enterprise rather than any form of socialism. If a house is so built as to knock a man's head off when he enters it, it is built wrong. It has always seemed to me that socialism builds houses that way. In the socialist house the average man does not particularly need his head. Other people do his political and social thinking for him.

It may be helpful to review the main reasons why, back in 1946, the young Atomic Energy industry was conditionally, and this word should be emphasized, was conditionally retained in government ownership.

The declaration of policy of the Atomic Energy Act reads in part—"The effect of the use of Atomic Energy for civilian purposes upon the social, economic and political structures of today cannot now be determined. * * * Therefore, any legislation will necessarily be subject to revision from time to time. It is reasonable to anticipate, however, that tapping this new source of energy will cause profound changes in our present way of life. Accordingly, it is * * * declared to be the policy of the people of the United States, that, subject, at all times, to the paramount objective of assuring the common defense and security, the development and utilization of Atomic Energy shall, so far as practicable, be directed toward improving the public welfare, increasing the standard of living, strengthening free competition in private enterprse, and promoting world peace."

The Gaseous Diffusion Plant at Oak Ridge, Tenn. It was to provide power for a similar plant at Paducah, Ky., that the author turned to the private power industry for assistance. They built plants costing one hundred million dollars to supply the electrical energy.

A socialist can derive no comfort from this statement of legislative purpose. It emphasizes peacetime and civilian use, as well as millitary or governmental use. But it emphasizes, too, the element of the unknown which then seemed to justify national ownership as a temporary expedient. As the late Senator McMahon put it—"When a push button may destroy a city, can we afford to leave such pushbuttons in private hands? If not, then we cannot allow private persons to own the facilities for producing fissionable material." But what was unknown back in 1946, when the Senator was speaking, is not nearly so unknown today. The simple push button ideas current then have lost most of their plausibility.

Moreover, the 1946 fears that the effects of atomic energy would be so revolutionary that only Government ownership could control its impact on business and community life have not been borne out by subsequent events.

Nor has history warranted the assumption that only by Government monopoly could secrets be kept and security preserved. Heartbreaking instances of espionage, in atomic energy programs, demonstrate that Government control is not a guarantee of secrecy. Security is and will continue to be a serious problem as long as the cold war continues. However, the extensive declassification which has already become possible points to the strong probability that private ownership of power reactors will be quite compatible with most exacting standards of security for military purposes.

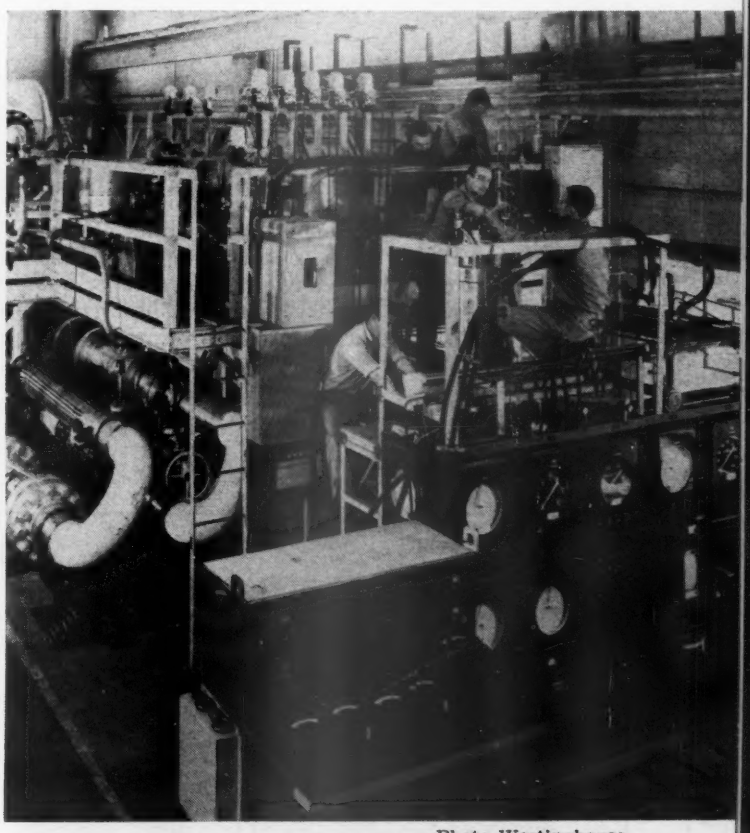
PERHAPS one of the most appealing of all the arguments against private ownership back in 1946 was the question of international control. The contention was then made that transition from national to international ownership would be easier if no private rights had been vested prior to the establishment of an international authority. But hope for the international control of atomic armaments has long since been dimmed by the uncompromising Russian attitude. All of us recognize today that in the absence of a minimum of goodwill and integrity on the part of the great powers involved, mere ownership of atomic energy facilities by an international commission would not suffice to insure the safety of the world.

If the common decencies are not respected there can be no respect for international law. On the other hand if some degree of goodwill and mutual respect can be established then it is quite possible that actual international ownership may not be an essential part of an international control plan.

But I think that the argument on "Seven (b) Day" that will take on real momentum and significance follows a different pattern. It will be based on the theory that since the atomic energy industry was developed and financed by taxpayers, it should be entirely for the account of the general public rather than for the profit of individual companies. The trouble with such an argument is that it falsely assumes that profit to private enterprise confers no benefits upon taxpayers. It lays down the class conscious and demonstrably untrue postulate that the interests of business units are inevitably or generally opposed to those of citizens. Such an argument also neglects the fact that business enterprises are, themselves, large taxpayers. It forgets that private industry is contributing an indispensable industrial "know how" to the harnessing of nuclear power, as well as adding a tremendous technology and the invaluable services of trained and skilled personnel. And finally a most important factor—increased private

—Photo by Westcott

Above: Officials check progress of AEC's Paducah plant. Conferring over blueprint, from left, are: F. C. Belcher, AEC; Professional Engineer F. J. Mayo, project manager for F. H. McGraw Co., the construction contractor; and E. A. Wende, AEC.



—Photo Westinghouse

Above: The AEC depends upon private industry. Reactor coolant pumps are being used by Westinghouse to prove out their performance before they are used in the Submarine Thermal Reactor prototype.

—Photo Knolls Laboratory

Schenectady, N. Y. is the site of this huge concrete saucer, 179 feet in diameter and 42 feet deep. It is the foundation for a 225-foot steel sphere, largest ever constructed, that will house an atomic power plant for the U. S. Navy. The project is under the direction of the Knolls Atomic Power Laboratory, operated by the General Electric Company for the AEC.

profits and wages, based on increased production, imply over-all benefit to the nation.

OTHER factors take equal rank with the ability of Government to finance the atomic program. Not least among these are the knowledge and techniques of the scientists and the productive and technological facilities of American industry. Dollars and scientists without industry could never have produced anything but a paper bomb.

Fortunately, in this country there is a healthy doubt respecting the claim that exclusive Government ownership of any segment of our economy results inevitably in the greater public benefit. Government ownership as such, is an abstraction. You can't make a big problem easier to handle by turning it over to the State.

However, let me hasten to add, that although I hope that "Seven (b) Day" will permit private ownership of reactors, I by no means advocate excluding Government operations in this field. The development and ownership of power reactors by industry is consistent with development and ownership by certain branches of Government of power reactors to meet specific needs which only the Government can afford to meet.

Readers of the *American Engineer*, professional engineers, can do much to make the plans and recommendations of Seven (b) Day more realistic and effective. As engineers you must become more informed about the Atomic

Next Month: A Fascinating Report of the Yucca Flats Atomic Blast, by NSPE Past President L. L. Dresser, an Eye Witness.

Continuing its policy of bringing its readers news and articles by and for professional engineers, the American Engineer in its May issue will carry an eye witness account of the recent Yucca Flats, Nevada atomic explosion, written exclusively for the magazine by Past President L. L. Dresser. Engineer Dresser was sent to the historic event by the Governor of Oklahoma as an official observer.

Don't miss this Diary of an Engineer at Yucca Flats in the May issue!

Energy industry. You can and you should participate actively in its program. The comforting alibi that secrecy prevents such activity and understanding is becoming less and less valid as declassification process continues. It is not enough that your companies contribute a few technical men to some special phase of the development of nuclear energy. The times require an understanding by industry's top management of the over-all revolutionary facts of the atomic age. This knowledge will enable you to participate intelligently in formulating needed and proper legislation. If legislative changes are molded only by the considerations of one or two segments of business, it will be only by coincidence that the over-all national interest will best be served. Only a thorough participation by all segments of our people will give promise of legislative changes of lasting benefit. And at least part of the understanding of the atomic energy panorama must be derived practically. In this connection I hope our commission can start, in the near future, regular orientation programs, in appropriate fields, similar to those of the Armed Services.

And I conceive it to be one of the special responsibilities of industrial management, in the atomic age, to lend some of its talent directly to the Commission. We have been fairly fortunate in recruiting technical personnel. But time and time again we have been turned down in our attempts to interest administrators and executives. I am aware of the financial sacrifice called for in giving up a few years to our work. However, I believe firmly that anyone who volunteers will be back in industry better equipped, more fully rounded out and a much more valuable man because of his exposure to atomic activities.

Once professional people know the problem, practically and theoretically, they will be in a better position to make the recommendations that "Seven (b) Day" should provoke. Meanwhile, increased knowledge will provide opportunities to reduce the boundaries of Government ownership little by little.

Let me illustrate by an actual example. In the Fall of 1950 we needed a new power supply of the order of a million kilowatts for our Gaseous Diffusion Plant at Paducah, Kentucky. Only the Tennessee Valley Authority, a government owned project, submitted a bid. I was not willing to accept the assumption that private electric utility companies were not interested and could not successfully compete. And so on November 8th, 1950, the day when the Commission formally decided to give this business to the T.V.A. I determined to get a competing bid from private enterprise.

A group of executives from private utility companies met with me on November 13th. They were asked to submit a proposal. This they did eight days later, despite the fact that the congressional budget wheels had already started to turn on the theory that the whole load would be supplied by T.V.A. The new proposal turned out to be so attractive that on December 17th our Commission formally reversed its previous action and awarded half the power load to the private group, now known as Electric Energy, Inc.

In all my business experience I have never seen a more bold, energetic or dramatic effort put forth in a shorter time. The new plan required commitments, for private financing, amounting to one hundred million dollars. It involved an engagement to supply approximately 500,000 kilowatts over a twenty-five year term. And all of this was done in less than one month.

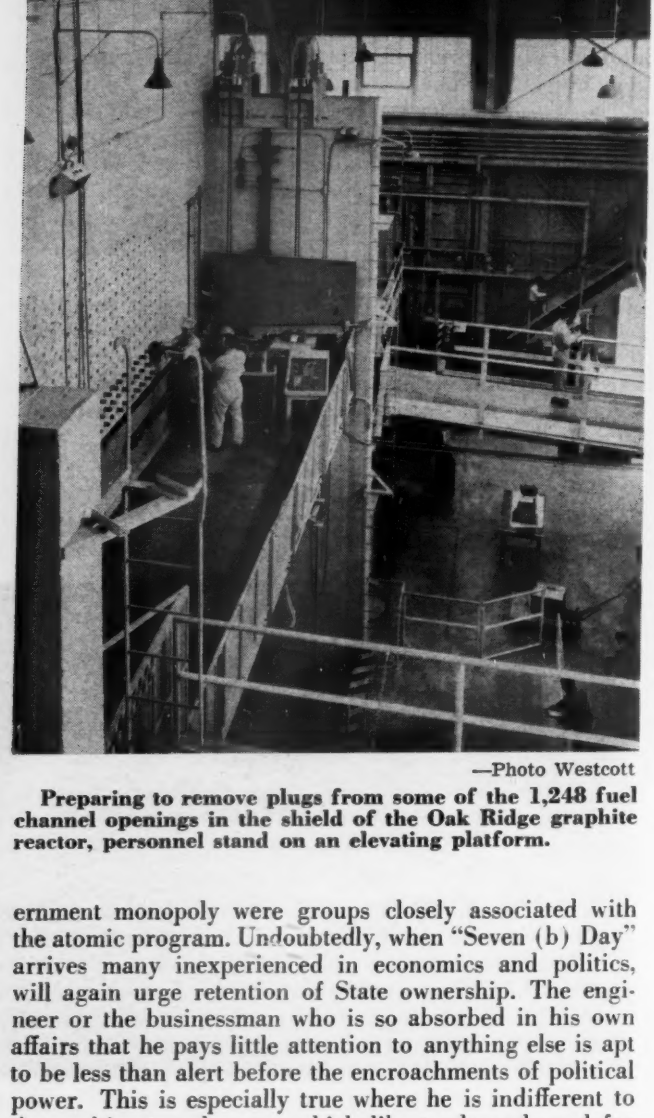
The Electric Energy, Inc. pattern has established a nation-wide precedent. It was followed only a few months ago and on a much larger scale. An entirely new combination of some fifteen private utility companies has been awarded the contract to supply some two million kilowatts needed for our new Portsmouth, Ohio Plant.

THESE I think are good examples of the ways in which the boundaries of Government ownership can be contracted. You and I and events have so far failed to convince many that whenever a task can be satisfactorily achieved by free enterprise, the fulfillment of that task ought to be left to free enterprise. We believe this because we believe in liberty and the right of free persons to make decisions for themselves.

Back in 1946 the most articulate spokesmen for gov-

Above: Night view of Paducah plant under construction. Below: Around the clock work continues at concrete batch plant on mammoth AEC construction project near Paducah.

—Photos by Westcott



—Photo Westcott

Preparing to remove plugs from some of the 1,248 fuel channel openings in the shield of the Oak Ridge graphite reactor, personnel stand on an elevating platform.

ernment monopoly were groups closely associated with the atomic program. Undoubtedly, when "Seven (b) Day" arrives many inexperienced in economics and politics, will again urge retention of State ownership. The engineer or the businessman who is so absorbed in his own affairs that he pays little attention to anything else is apt to be less than alert before the encroachments of political power. This is especially true where he is indifferent to those ultimate values on which liberty depends and for the sake of which the human race exists.

There is a danger of making of both science and business a kind of idol worship. No nation accomplished greater feats of scientific and technological organization, or boasted more scientists and engineers than did Germany immediately before the last World War. Yet neither the businessmen nor the engineers in Germany stopped Nazi tyranny. How can we account for this? They had blind spots which you and I, learning from their sad experience, must never permit to obscure our vision.

Too many engineers, businessmen, scientists and politicians fail to answer the crucial question: What is the essential difference between our system and that of any totalitarianism? Is the essential difference between the American system and that of Hitler or Stalin a mere matter of science, technology or political and economic techniques? Of course not. Science and technology are as available to tyrants as they are to us. So are the techniques of economics and politics. When science, technology and organizational techniques are not humanized by the right spiritual outlook, they become cold and ruthless. Organization of science and industrial technology is the most potent weapon of the modern mass state. Indeed, the modern tyrants have already borrowed our ideas of organization without curbing them by our love of freedom and our love of liberty. They depersonalize our efficiencies by political organizations which lack our Bill of Rights and our religious and ethical purposes and restraints.

It is in the area of such purposes and not in the area of mere technical means that we must seek the essential differences between our way of life and that of Marxists' theory and practice. Only by spiritual values, founded ultimately in God, are civilizations really justified. The founders of our nation had the courage to tell the world of their firm belief in this truth. For the rectitude of their action in the Declaration of Independence, they appealed, not to any fuzzy legalistic theories, but "to the Supreme Judge of the World"—the author of all liberties.

OUR nation has lost much of that original awareness of the primacy of the spirit. This loss has created a vacuum in which collectivist theories can thrive. And atomic power for the industrial machine is an obvious segment of the economy on which a collectivist bridge-head can be established. We must be alert to this danger.

Unless we can hitch our consideration of the problems of atomic energy and "Seven (b) Day" to such eternal verities as these, we will all be like a magnificently organized crew on a technically perfect ship in the middle of an ocean—without compass and without a place to go. If we build industry and science without thinking of human and spiritual values, we are making of them false gods to whom we offer human sacrifice.

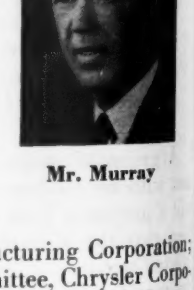
During this last Century we have acquired great materialistic knowledge and power, but at too high a price—loss of spiritual values. We were perhaps in a fair way to that bankruptcy of soul which Christ warned of in terms that the business of His age could understand, "What does it profit a man if he gain the whole world and suffer the loss of his own soul."

The awful threat of the fissioning atom in war has pulled us up short in our flight from the Spirit. May this reversal continue and expand as we move into the new era of peacetime nuclear energy. —***End.***

About the Author . . .

Thomas Edward Murray, the author of this article, is a distinguished member of the New York State Society and has served with the Atomic Energy Commission since March, 1950.

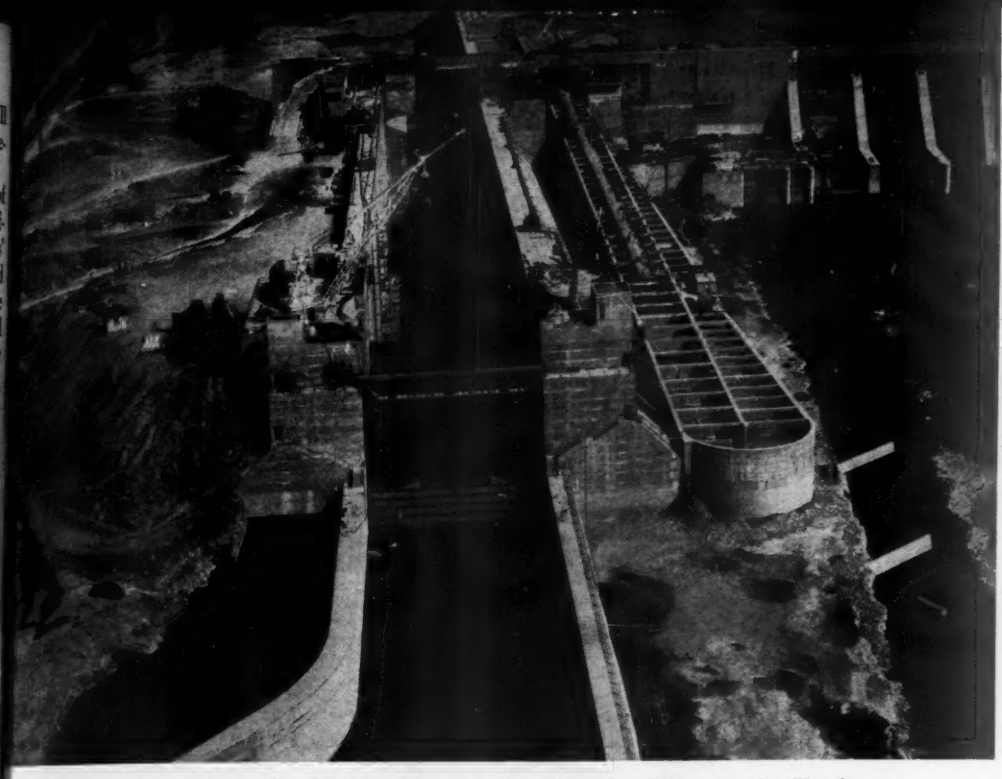
Born in Albany, N. Y., the son of Thomas E. and Catherine Bradley Murray, he earned his B.S. in Mechanical Engineering from Sheffield Scientific School, Yale University. He has also received LL.D. degrees from Fordham, Georgetown, and St. John's Universities.



Mr. Murray

Before he became a member of the AEC, his career included service as receiver, Interborough Rapid Transit, 1932-40; trustee, United Mine Workers of America Welfare Fund; president, Metropolitan Engineering Company; director, Murray Manufacturing Corporation; director and member, Finance Committee, Chrysler Corporation; and trustee, Bank of New York and Fifth Avenue Bank.

He holds approximately 200 patents in the electrical and welding fields. He is a fellow of the American Society of Mechanical Engineers and a member of the American Institute of Electrical Engineers.



Construction work on the McNary Dam on the Columbia River in the Northwest. This is a close-up of a navigation lock and the permanent State of Washington shore fishladder.

An American Engineer Photo Story

An Engineering Fish Story

By David A. Heller

HOW'D you like to hear an engineering fish story? This one is a whopper, but there's none of the traditional stretching of the truth that we have all come to regard as part and parcel of fish tales.

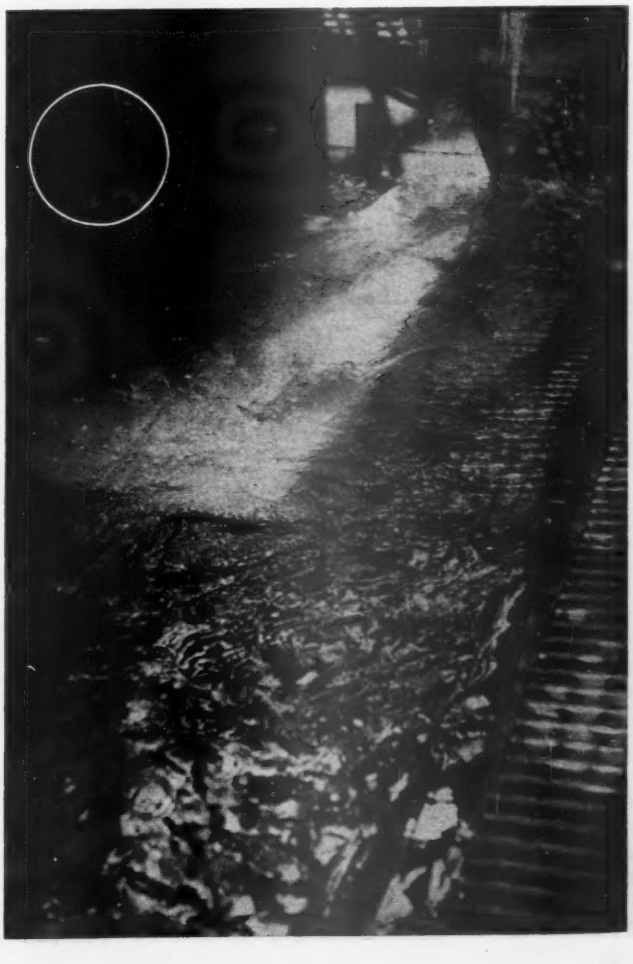
Stakes in this saga are big—namely the future of the $20 million yearly salmon fishing industry on the Pacific Coast's Columbia River. The take, in sport and commercial fishing, on that mighty body of water is roughly 31 million pounds.

Now, at first glance, you might think that engineering and the life cycle of a fish have very little in common. But you couldn't be more wrong. For engineering has created a menace to the continued existence of the big fellows and engineering is now removing the menace. The problem is created by the hundreds of dams, mammoth and small, that engineers have built on the Columbia and Sacramento river systems. The salmon have been cut off from literally hundreds of miles of spawning area in upper Washington State by the construction of Grand Coulee dam alone.

It seems that salmon are very sensitive — they will spawn only in the area in which they were born. Some mysterious sense of nature enables them to distinguish minute differences in the chemical composition of water, differences far beyond the ability of man's measuring devices to distinguish.

Blueback salmon (circle) jumping in the fish trap at the Rock Island Dam, Columbia Basin project, show their eagerness to continue their journey to the spawning grounds.

—Photo by F. B. Pomeroy



Not only are the fish fussy about where they breed; they perform their reproduction on a strict time schedule which fact has caused plenty of headaches for engineers and biologists of the Army Corps of Engineers and the Fish and Wildlife Service.

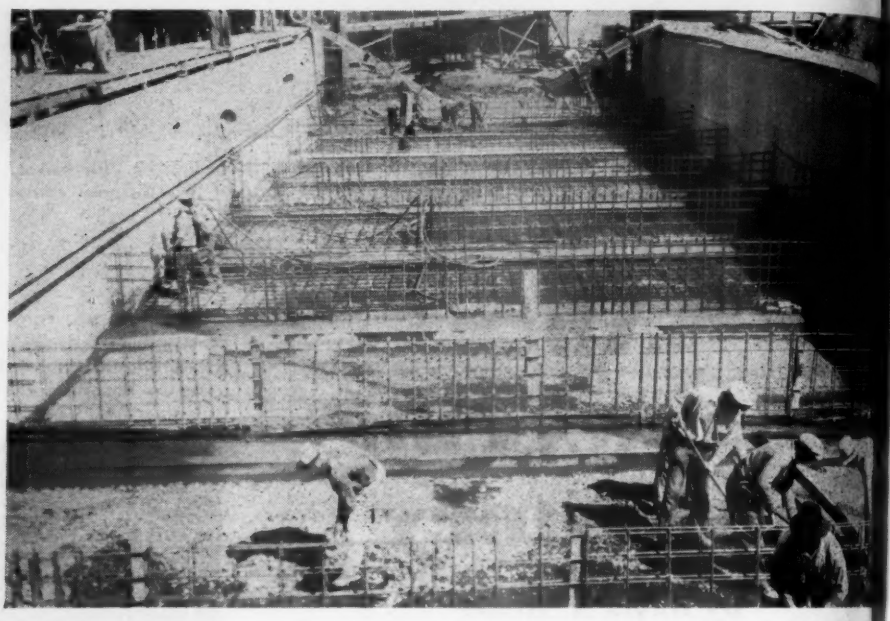
Here is the way William Hagen, an expert with the Fish and Wildlife Service, describes the situation:

"When the salmon enters its home stream to spawn, it has a strict time schedule to meet. Nature, by some process we know little about, lets it be known when the time comes to leave salt water and start for the spawning ground, be it 1,500 miles or only 50 miles distant. It must arrive at the time of appropriate water temperatures or its eggs won't hatch and spawning will be ineffectual.

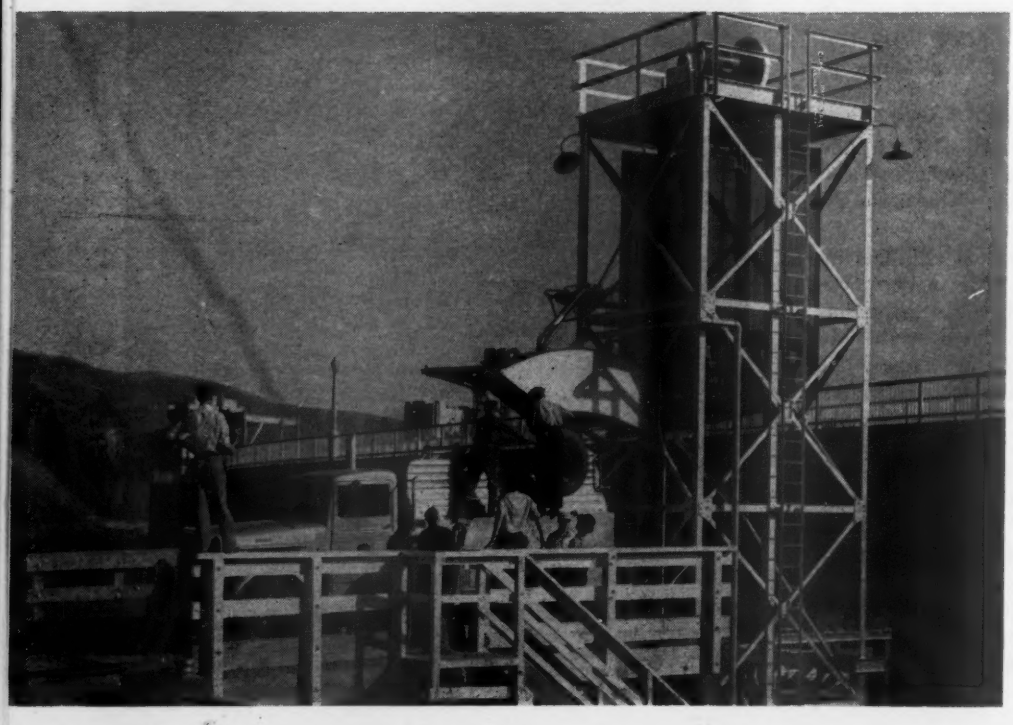
"We are engaged in an extensive program of building fish ladders around the dams, but in many cases, there is a delay that proves disastrous. The salmon try to leap over the dams and only when exhausted will they usually drift over to the side of the river to the fish ladder. Maybe there's only a delay of a day or two at the dam—which is usually not too serious. But suppose you've got a dozen dams for the fish to go around? The delay in reaching the spawning ground may well prove too long.

"With regard to America's salmon fishing program, we have two important engineering-biological problems: guiding the adult fish up stream over the dams so that they can breed, and guiding the young fish to safe passage downstream.

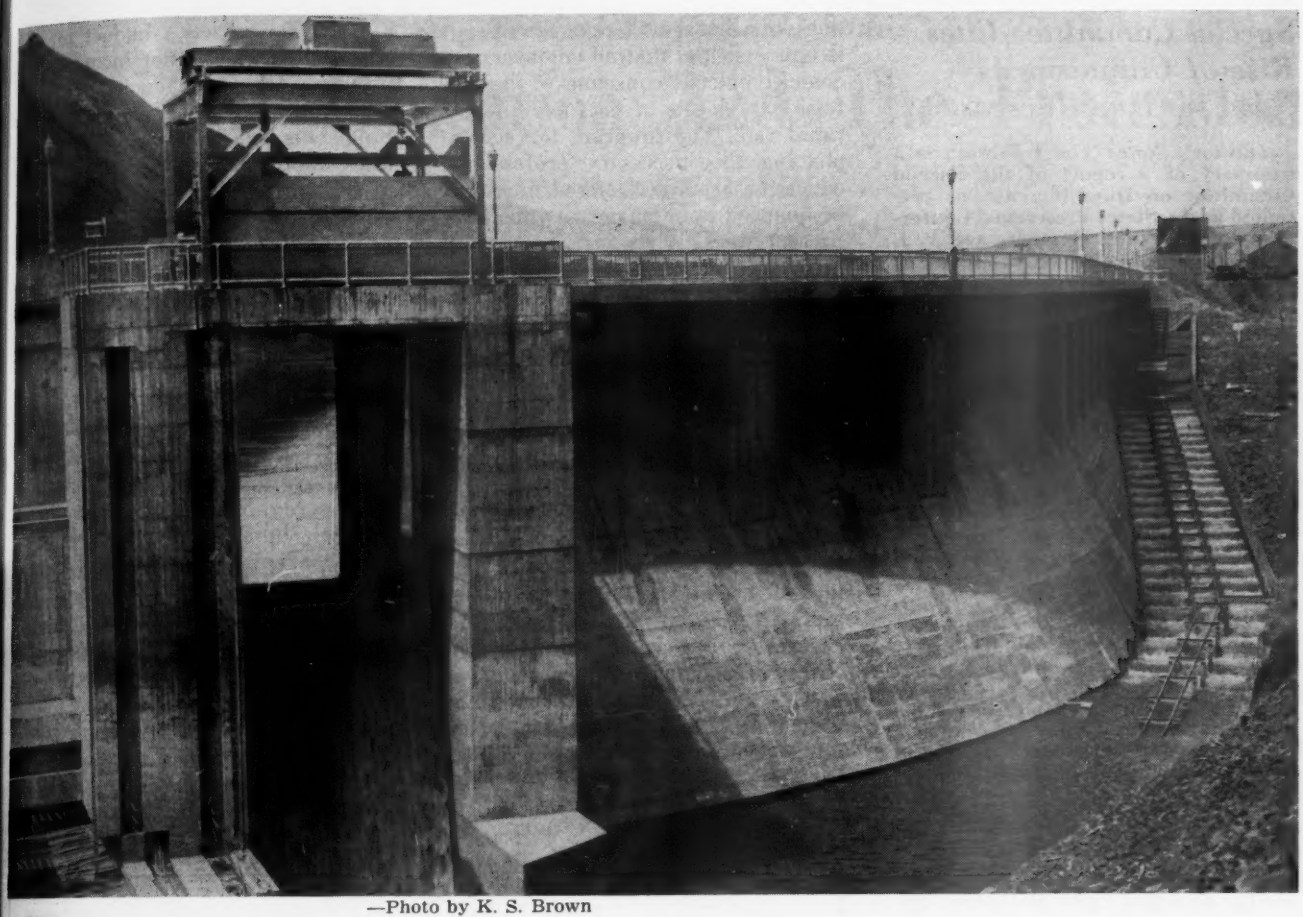
"The fish naturally are attracted to the heaviest flow of water, which, in every case, in directly over the dam. The flow of water in the fish ladders (which have steps just like any other ladder), is relatively very slight. So



A Bonneville Dam fishladder under construction at Bradford Island. Engineers have helped figure out how to get salmon back to the waters in which they were born. Some mysterious sense of nature enables them to distinguish minute differences in the chemical composition of the water, and they will breed in no other areas.



All aboard the Salmon Inter-flumen Special. Loaded with fish trapped at Rock Island dam on the Columbia River, the truck will cross land and deposit the fish in streams entering the river below Grand Coulee Dam.

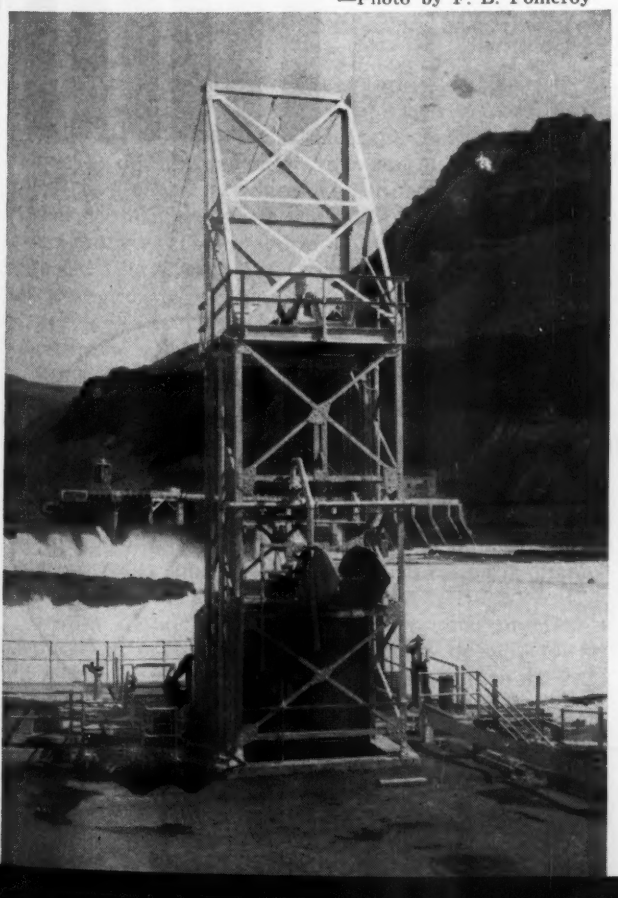


—Photo by K. S. Brown

Columbia Basin Project at Grand Coulee Dam, Washington. This is a view of the north fishway and control gate spillway for migration of salmon and other fish around the Rock Island Dam, Washington.

Fish trap and elevator on fish ladder at Rock Island Dam, Washington.

—Photo by F. B. Pomeroy



we've been putting our best engineering brains to work on the problem. Just about everything has been tried: sonic devices, high frequency sounds, lights—we've done everything we can to 'scare' them over to the ladders and safety. So far, nothing has worked. But the Fish and Wildlife Service has on trial an electrical device which seems to have good possibilities, both for attracting and repelling the fish. The salmon seem to be attracted to the positive poles. This is complicated, however, by the tricky problem that the amount of current necessary varies with the size of the fish. Unfortunately, the fish aren't the same size, but range from tiny ones to 25-pounders.

"When the young fish start downstream, many of them are killed as they try to pass the dams. There is no known way of getting them to take the fish ladders; most get caught in turbines, spillways, etc. That's the next engineering problem to be worked out. You can appreciate the problem when you realize that Bonneville Dam, for example, is 62 feet high. Others are higher, up to 100 feet and over."

Building fish ladders is no small undertaking. On some of the bigger dams, the cost will reach up to 15 million dollars. Mr. Hagen points out that knowledge acquired in the construction of Columbia River dams will come in handy when dams are built on Alaskan rivers, site of the very much larger Alaska salmon fishing grounds.

"So far, engineering efforts in building fish ladders, combined with the efforts of hatcheries and the relocation of salmon spawning grounds in the lower river has kept the catch from declining much. In fact, the runs of sockeye salmon have been increased by hatching operations," Mr. Hagen reports.

Even the fish, it seems, can't get along without engineers.

Special Committee Cites Rise of Unionism As Need for Dues Increase

(Editor's Note: **The following is a summary of a report of the Special Committee on Dues Increase, as presented at the States Presidents' Conference in Louisville. Members are A. J. Ryan, Chairman; Robert E. Allen, T. Carr Forrest, Jr., and C. G. Roush. A limited supply of the full report is being made available to State Societies.)**

THE following excerpt from a presentation of the American Federation of Technical Engineers to the Wage Stabilization Board should be of interest to you:

"The premise offered is that engineers—exempt and non-exempt—are an integral part of the work force, and as such, all non-supervisory engineers fall properly within the interests of organized labor. A secondary premise is that in elevating engineers to the 'elite status' of doctors and lawyers, the Defense Production Act is applying an obsolete and superficial criteria; because in modern industrial management, the engineer is more closely akin to the machinist at his lathe and the production worker on the line."

. . . The formation of (unions) emphasizes the fact that the engineering societies must pursue more aggressively activities and programs required by a maturing profession . . . It also indicates the necessity of a decided increase in the tempo of NSPE activities, particularly in regard to an effective prestige building program. If NSPE is to accomplish the objectives set forth in its constitution, it must build and maintain a strong organization which will educate the members of the profession for the purpose of building the prestige of the profession by dissemination of information regarding the importance of engineering activities to social and economic welfare of our nation and its people. With prestige, adequate compensation can be obtained without resort to collective bargaining.

. . . In order to assure efficient management and continued growth of NSPE, the administrative budget should be modified . . . to provide adequate facilities and personnel in the Washington office, three meetings per year of the Board of Directors, and other essential items of administration of our expanding society. To accomplish this portion of the program will require that each member's annual dues be increased in the mount of $0.84.

. . . It is a well-known fact that an active committee can accomplish as much at one meeting as with two years of correspondence. Perhaps such a lack of efficiency could have been tolerated in the past in order to save dues, but that is no longer the case. It is now essential that all engineers become completely conscious of the professional aspects of engineering at a rapid rate. The program for accomplishing this necessary professional education at an accelerated rate must be financed by some means other than present dues. A modest increase of $0.52 per member for this purpose will permit much more active committees and resulting programs in this field.

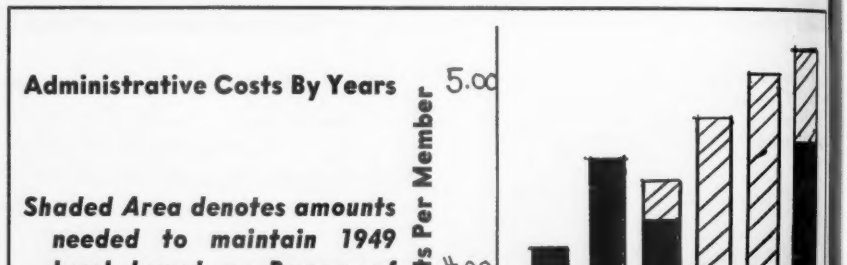
To date, NSPE has not embarked upon any real program for prestige building except for the public relations program which was financed by funds raised by voluntary contributions. Since prestige building is the principal objective of the Society and since recent activities have indicated an immediate need for a really effective program, NSPE can no longer defer activities for the accomplishment of this objective. These activities must include . . . legislation . . . continuing the public relations program . . . Certainly . . . adding $1.24 is a minimum for the accomplishment of any effective program.

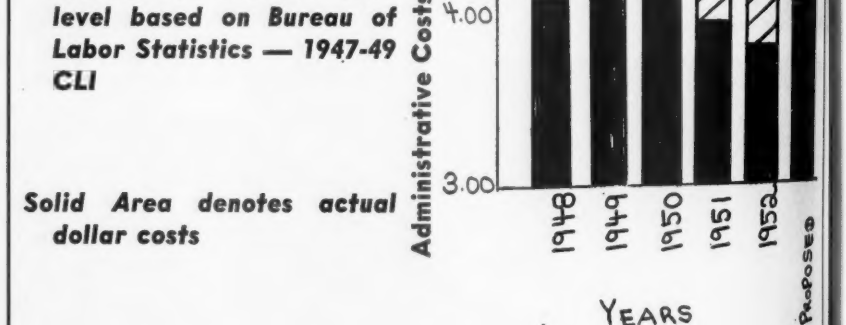
. . . The Society's budget for the past few years has not included any provision for contingencies or the establishment of an adequate reserve fund. This is obviously not good business. Allotment of an additional $0.40 of each member's dues for these purposes is only good fiscal policy.

The following is a summary of the requirements for individual dues to accomplish the activities described:

Administration	**$ 4.66**
Educational Program . . .	**1.24**
Prestige Building	**1.58**
Contingencies & Reserve	**.52**
	$ 8.00
Subscription to *American Engineer* . .	**2.00**
Total Dues Per Member	**$10.00**

That NSPE members cannot afford the $3.00 increase in National Society dues required for the accomplishment of this program seems unwarranted under present economic conditions. To the contrary, they can no longer afford to have NSPE operate on an austere budget if they hope to accomplish the stated objectives of the Society . . . —***End.***





A Step Toward Professional Status?

Graduate Education And The Profession

BY DR. R. L. SWEIGERT,
Dean, Graduate Division, Georgia Tech.
Member, NSPE, and National Director from Georgia.

THERE are many definitions of a profession but the one I prefer and the one that seems the most tangible includes the statement that a definite body of knowledge of high order is essential. The grouping of knowledge would be inherent for the professional field involved but parts of it could be basic disciplines that would not need to be exclusive for that field. A high level of mental activity and an extended period of high level education are involved.

One of the characteristics of a profession, as I see it, is that there must be something distinctive about it, something that specifically differentiates it from other vocational activities. If there is not good differentiation, then the field would hardly be called a profession.

We can see something distinctive and different about the medical field, about the law field, for example. Do we have such distinction in the case of engineering? I believe we do. It has been stated by others and I repeat here, the prime distinction lies in design based upon the application of mathematics, the physical sciences, and in some fields the life sciences. The prime end point of the engineer's work is a device, a process, or a structure.

We all know the great advance that has and is still taking place in the physical and the life sciences. The men in the sciences many decades ago found it necessary to carry their studies to the graduate level to solve their problems in fundamental and basic science. With this great advance in science which the engineer must use if we are to progress, the engineer with a Bachelor's education may very likely find himself handicapped because the mathematics and sciences that he is more and more becoming expected to use have advanced to higher levels. Thus much of professional engineering education is being forced to a higher level.

As engineering education goes to higher levels, to the graduate level, it may be somewhat easier to acquire professional status, not only due to a new professional consciousness on the part of the man but also in the eyes of people in general. Extended education marks the group, it tends to unify the group and make the individuals more aware of their profession, and that they are part of a profession. Perhaps this is not a sound criterion and many will take exception to it but a pertinent point for professional stature seems to be how much and how high a level of education is involved.

The field of medicine assumed a better professional status when medical education was extended. It is anticipated that the same reaction can happen to engineering. However this difference exists. Formal medical education tended to extend itself horizontally and included much on the art side of medicine, perhaps to the detriment of the science of medicine. If a few signs on the horizon are being correctly interpreted, medical education is attempting to rectify this situation.

Because of the nature of the professional practice of engineering, engineering education must develop toward the science rather than the art which brings it to the graduate level making it vertical in structure rather than horizontal as in medicine.

IN the final analysis all education is self-education. We learn by doing; mental as well as physical activity is involved in doing. To learn the art of engineering we must practice the art. This is difficult in formal engineering education but the science phase can be handled well in the educational situation. I believe the graduate thesis and graduate special problems come the closest to the art of engineering and these are essentials of modern graduate education but not in general of present day undergraduate education.

In manpower studies, a greater realization on the part of industry seems to be developing in regard to the place of the professional engineer. As stated recently by one practicing engineer, in place of having two technicians to one professional engineer, it appears that there should likely be ten technicians to one professional engineer.

The technician does not need advanced education, his prime work is not creative, nor is he concerned with creative design based upon the application of mathematics and the physical sciences. As professional engineering is more and more separated from the sub-professional, the professional engineer will find more need for advanced professional education. He will no longer be able to survive satisfactorily in a twilight zone between professional and sub-professional, but because of lack of sub-professional help if for no other reason he has been forced in many cases to perform much more at a sub-professional than a professional level. Separation of the professional, and sub-professional will aid in bringing those desiring to be professional engineers to a higher and more satisfactory level of professional competence and performance.

As already indicated there is a development now going on in medicine in some quarters to bring in graduate medical education and this should increase the compe-

tence of that profession enormously. It is believed that engineering is avoiding the weaker horizontal development by its development at the graduate level.

The profession of engineering can narrow down to include only those phases for which extended education of a high order is necessary. Salesmen, operators, maintenance men, installation men, are not likely to generally require this advanced education, and others besides those with engineering education can take up such functions, as is now being demonstrated by General Electric and other companies. Also we have more and more graduates from technical institutes, and we have these men entering such activities as those that have been listed.

The study of engineering in transition from 1940 to 1946 showed engineers entering research, development, high level design, and consulting in increasing proportions while the proportions entering functions similar to and including the first group decreased. Some other postwar studies showed that the more study a man devoted to his preparation for engineering, the greater the tendency to enter those functions requiring more education and a higher level of professional performance. These functions are particularly those of research, development, and design based upon the application of mathematics and the physical sciences.

These functions are carried out through direct employment and as consultants. While we would expect that the greater proportion of professional engineers would be engaged in research, development and design of a high order as already indicated, it is also likely that some devices, processes, or structures, because of their nature, will require a full professional level man at the supervisory level to satisfactorily install and operate them, and some professional engineers will always enter this kind of work. In such cases it is not the function that involves the professional man but the level of performance and the educational background essential for that performance, which can call for full design competence in order to handle the work involved. The use of computers is of this type.

We have excellent engineers who have not graduated from college and who are engaged in the high level professional functions of engineering. We also have many with bachelors' degrees. I have yet to find one of these men who has not put forth great effort beyond his immediate job to gain the additional education which he must have found indispensable.

In the future more and more men will find it more advantageous to gain the needed education through graduate level work. This condition is verified by the great pressure put upon graduate schools to establish off-campus graduate centers in engineering and science.

Many institutions over the country are facing these pressures. Many centers have already been established and while there are grave doubts that the job can be done fully effectively in off-campus centers, many men in the past and certainly for some time in the future will take graduate work this way and some will obtain Master's and Doctor's degrees in the engineering field. As the months and years go by, the trend is becoming increasingly evident.

A recent study of the top executives of 250 of our largest business organizations has indicated another point that is somewhat contrary to what some of us have thought about engineering education. A study of men in the above group shows that the proportion of these men who have studied business and economics as a major study is markedly increasing. The engineering group is decreasing.

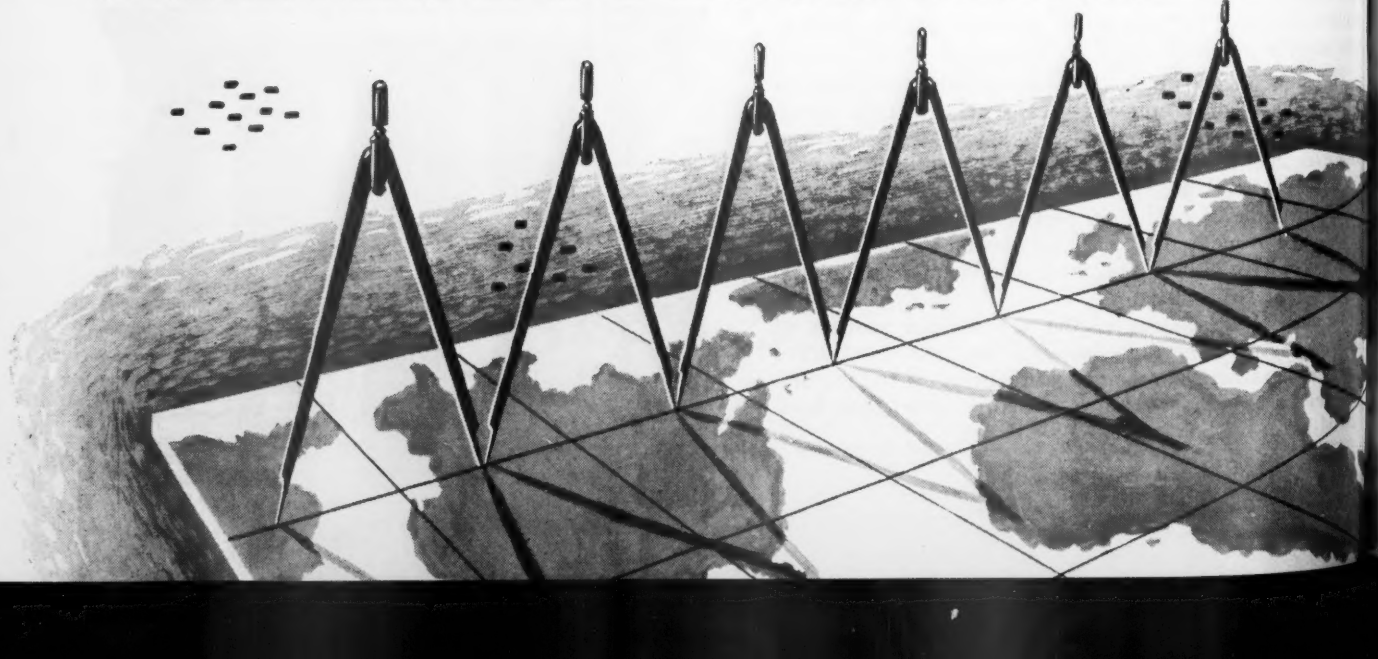
The proportion of the younger group that has taken post graduate work is almost double that of the older group. Thus we see that the complexities of modern society, of modern business, are calling for higher education on the part of those who want to make management their career and this education is in the field of management and administration.

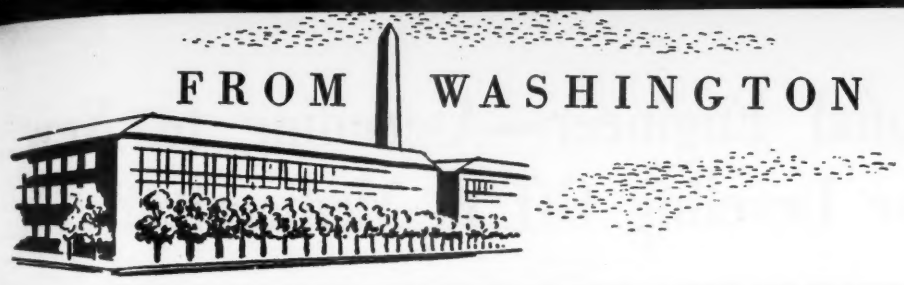
This is all to the advantage of the engineering profession. We hope to see more and more of those who are qualified, coming into the educational phase with the prime purpose of being professional engineers and that will be their ultimate goal. Engineering as a profession must stand on its own feet, must be an end in itself, and should not be considered as primarily a path to administration, even though a small proportion may always end up in administration just as lawyers may, or even doctors.

The data show that as many of the executives in the study previously mentioned came up through legal channels as engineering, with neither one being close to the proportions coming from several other channels.

Through our guidance programs, through our improvement of engineering education at all levels, and through our improvement of the professional aspects of engineering we will finally end up with a profession of engineering second to no profession in this country.

The author says that postwar studies indicate that the more time and effort a man devotes to his preparation for engineering, the greater the tendency to enter those functions requiring a higher level of professional performance.





FROM WASHINGTON

By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

A few months ago only a handful of people had ever heard of Captain Hyman G. Rickover, U.S.N. Today his name is familiar in the halls of Congress and to the millions of readers of national magazines and newspapers. The essential facts behind this new cause celebre may be briefly stated.

Captain Rickover is a naval officer assigned to engineering duty. He has been working for several years on the development of a submarine utilizing atomic power and has been an enthusiastic and outspoken advocate of this new type of naval vessel. His vigor and enthusiasm, it is said, are not shared by many high ranking naval officers and his friends say that in pressing the development of the atomic submarine he has stepped on the toes of some important "high brass." On July 8, 1952, a group of nine admirals sitting as a naval selection board passed him over for promotion to rear admiral. This was the second time he had been passed over for promotion and therefore under the law he would have been retired this year. But shortly after this action of the selection board Life Magazine, The New York Times, The Christian Science Monitor, and other publications with national audiences carried feature articles extolling his work and deploring the Navy's failure to promote him, thus bringing about his involuntary retirement. On February 12 of this year, Representative Sidney R. Yates of Illinois took up the cudgels in behalf of Captain Rickover and addressed the House for sixty minutes, praising Rickover and assailing the Navy for its attitude and action. Yates received substantial support from his colleagues, and one immediate result was the decision of the Senate Armed Services Committee to hold up the promotion of thirty-nine Navy captains to rear admiral pending an investigation of the Rickover case.

Within the past few days the furore has subsided somewhat on the promise of Navy Secretary Anderson that arrangements were being made to keep Captain Rickover on active duty and that another selection board would be convened to consider his promotion.

The significance of this episode to the engineering profession is not the fate of one individual. Rather, the true import of the affair is the fact that it has brought to light the whole question of the recognition by the services of officers assigned to engineering or technical duties and has brought to the attention of Congress the indispensable role of engineering officers in the national defense.

In his address to the House, Representative Yates asked the rhetorical question, "Why is it important that Captain Rickover's case be singled out?" His answer:

"We are in a new age, an atomic age. Let us establish atomic age standards. In selecting the officers who are to govern the Navy, recognition should be accorded to officers who are scientists as well as those who are fighting men, a principle which the Navy today is unwilling to adopt."

Attacking the Navy's system of promotion selection for engineering duty officers, the Illinois Congressman said, "What possible knowledge do line officers have of the qualifications of engineering duty officers? Do they have an interest in engineering accomplishments? The Rickover case proved the contrary." Yates has now offered a bill to bring about certain reforms in the Navy promotion system applicable to engineering duty officers which would, among other things, require that the selection boards to consider the promotion of engineering duty officers to admiral rank consist of three line officers, three engineering duty officers and three civilians who would be selected by the President from among the outstanding scientists and engineers in the country, in place of the present arrangement of six line officers and three engineering duty officers.

The NSPE National Defense Committee, under the chairmanship of Colonel Chester Lichtenberg, has been in communication with Representative Yates and members of the Senate and House Armed Services Committee in connection with a related problem: the provision of the Officer Personnel Act which forbids engineering duty officers to succeed to command at sea even though they may be qualified by reason of past experience and training. Whether corrective action on this provision will be sought as part of the Yates bill is not known, but the Rickover case and the resultant Yates bill has opened the first practical possibility along this line since the NSPE Board of Directors voted approval in 1951 and reaffirmed it as recently as June, 1952.

The Professional Engineer—Ascending to New Heights or Leveling Off to Mediocrity?

By W. R. WOOLRICH, P.E.,
President of the American Society for Engineering Education
and Dean of Engineering, University of Texas
Member, NSPE

FOR more than four decades the Founder and associated engineering societies have been making some effort to bring together all of the professional engineers of the United States as a unified group. Their problem is not unlike that which faced the Continental Congress when that body labored with the task of bringing together the people of thirteen states each with a high premium on their political freedom.

The first organizational attempt to unify the engineering professions was initiated in 1920 by the Founder societies when a Federation of American Engineering Societies was formed with the American Engineering Council as its operational staff. By 1924 this organization structure was changed and then evolved the American Engineering Council as a single unifying agency.

The early activity and progress of the American Engineering Council was effective from its point of vantage in Washington, D. C., but its financial structure was not one that could withstand the vicissitudes of a sustained depression. Dissention about both the function and financial support of this Council led to its complete abandonment by 1938, another depression fatality.

Growth of ECPD, NSPE, EJC

While the American Engineering Council was experiencing a loss of national society moral and financial support, there was organized in 1932 the Engineers' Council for Professional Development dedicated to promote the professional growth and status of engineers and potential candidates of engineering from the period of pre-college preparation thence through college and pre-registration to final recognition as a member of the profession.

DURING this same period of the rise of the ECPD, an active segment of the professional engineers registered in the several states founded the National Society of Professional Engineers in 1934 and established headquarters in Washington, D. C. Full membership in this organization was limited to those who were recognized by state registration as professional engineers. Many of the services performed by the American Engineering Council for the engineering profession at the national capital were taken up by the NSPE as the ACE closed its doors in 1938.

In 1941, the several Boards of Directors of the Founder Societies created a Joint Conference Committee made up primarily of their retiring Presidents and Executive Secretaries. This group, after four years of deliberations established with the approval of their respective Boards, the Engineers' Joint Council.

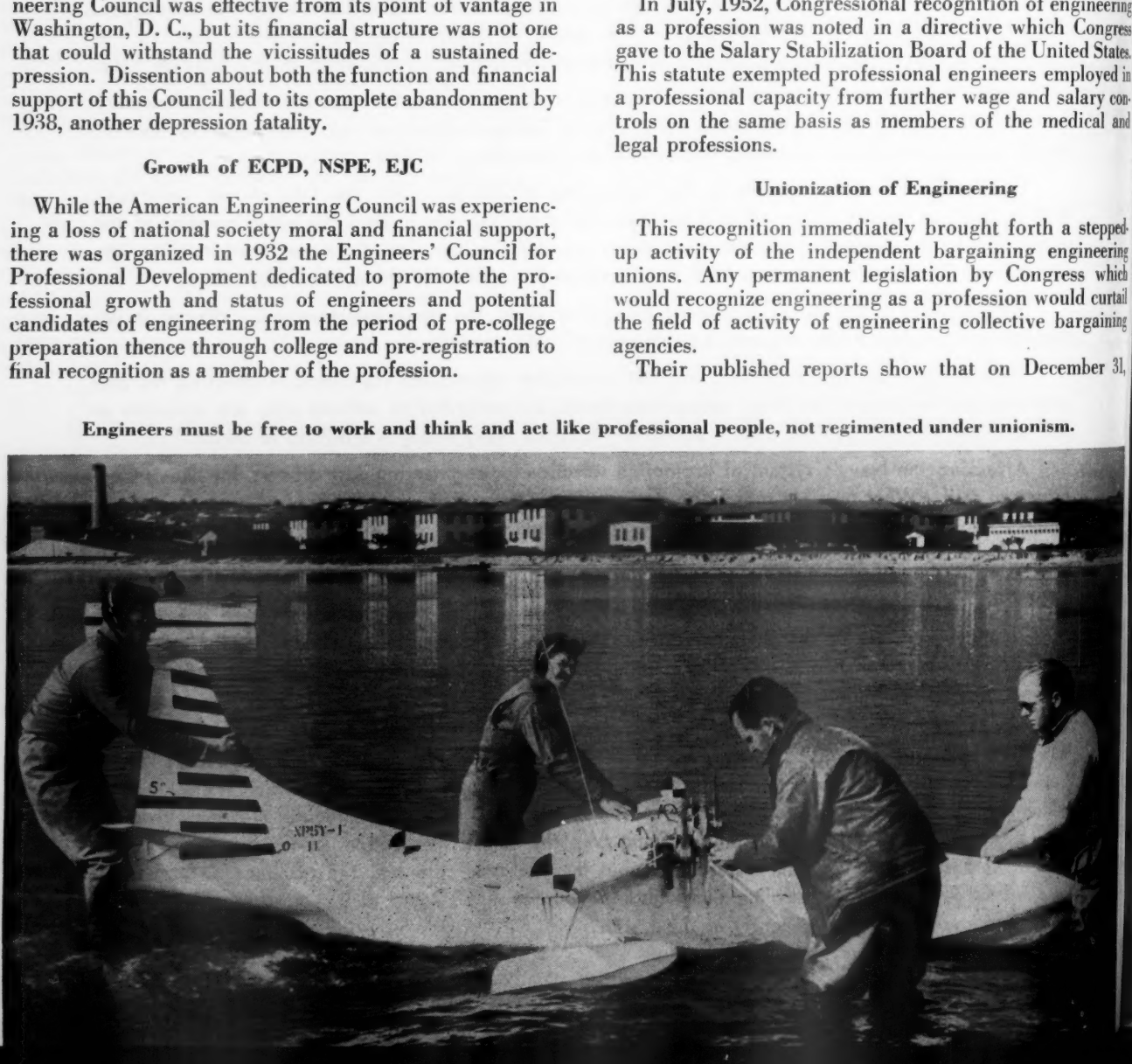
In July, 1952, Congressional recognition of engineering as a profession was noted in a directive which Congress gave to the Salary Stabilization Board of the United States. This statute exempted professional engineers employed in a professional capacity from further wage and salary controls on the same basis as members of the medical and legal professions.

Unionization of Engineering

This recognition immediately brought forth a stepped-up activity of the independent bargaining engineering unions. Any permanent legislation by Congress which would recognize engineering as a profession would curtail the field of activity of engineering collective bargaining agencies.

Their published reports show that on December 31,

Engineers must be free to work and think and act like professional people, not regimented under unionism.



1952, the independent bargaining groups of engineering employees as independent unions were activated as The Engineers and Scientists of America (ESA). It was their hope that by the time of their first annual meeting in Los Angeles in February of 1953, the forty thousand members of the local groups would unite into one national organization, the ESA. The interim President, Mr. Joseph Amann, announced: "Representatives of Engineers and Scientists of America are prepared to meet other labor leaders and Senator Taft to discuss amendments to the Taft-Hartley Act, provided a meeting can be arranged. Engineers and Scientists of America is the only national organization whose members engage in collective bargaining with their employers to speak for the approximately 400,000 employed non-supervisory professional engineers and scientists who are so vital to our national defense and to our way of life."

The Vice-President of the newly formed ESA, Mr. John Taft, at an open meeting at Summit, N. J., November 19, 1952, outlined the activities through which they expect to carry on their promotion. The first activity mentioned was announced as "Representation of engineering and scientific employees before government bodies, colleges, political groups, etc., for the purpose of 'setting things straight' with regard to engineers' views on matters of interest to them."

Following his formal talk at Summit, Mr. Taft stated "ESA expects to conduct an 'Industry Evaluation' program in which it will study the working conditions, salaries, fringe benefits, etc. of various large firms. The result of the study will be made available to college students as well as to the engineering and the scientific profession for their information and guidance." He further revealed that ESA plans to organize student chapters at major engineering colleges and defended this plan by stating that professional societies have student chapters and that his organization is entitled to the same prerogative.

THE previous surveys of the National Societies Committee prepared in May, 1946, indicated that as of that date less than five per cent of the engineers questioned favored a certified union. Those who opposed the union of engineers did so usually on the basis that by unionizing:—

1. Individual initiative would be restricted.
2. Individuals would be regimented by the union organization.
3. A "typing" of engineering positions and a "leveling" of salaries would result.
4. Professional status and prestige of engineers would be damaged if not lost entirely.
5. Individual advancement and recognition of individual achievements would be stifled.

PROBABLY our democratic process of our unifying engineering councils has been too slow to keep pace with the rapid strides made by the engineering profession. The Engineers' Joint Council, the Engineers' Council for Professional Development and the National Society of Professional Engineers now face the alternative of speeding up their coordinated effort to improve the professional status of the recognized engineer or giving way to a less discriminating group of union engineers who would like to speak for all of us on the workman's side of the collective bargaining conference table.

American industry has also much at stake in this situation and much of the corrective work in our present salary scales must come from the employers of engineers. There is little about which to quarrel by the engineering profession as related to beginning salaries for men with Bachelor's, Master's or Ph.D. degrees in engineering, but the scales of advancement have been woefully neglected by a large portion of American industry. If management would do its part, the spread in salaries for professional engineers must be greatly increased for men of three, five, ten or twenty years of service commensurate with the beginning salaries if the engineering unions are to be effectively answered.

The engineers of less than average ability can generally be given a salary lift by a collective bargaining agreement. In the leveling off process he gains at the expense of those who are above the average. When a union is first established there may be even a higher average wage than could have been obtained by individual contract by superior engineers. But the future is not too bright in collective bargaining for the advancement of men of creative genius and individual professional abilities. Collective bargaining is never inspirational to the man of creative talents and recognition cannot be readily afforded him other than as part of a collective group.

In this emergency may we look to the Engineers' Joint Council, the National Society of Professional Engineers and the Engineers' Council for (*Continued on page* 42)

The service motive is the hallmark of the true professional man. Below: Omaha, Neb., NSPE members organize protective activity during recent flood.

State Presidents Meet in Louisville

State Heads Discuss NSPE and Professional Problems

State Presidents from thirty-three of NSPE's thirty-nine State Societies gathered in Louisville, Ky., March 13-14, for the National Society's Annual President's Conference.

The Chief Executives from the States, National officers, National Committee Chairmen, and those just interested in the Society, discussed professional problems during the two-day affair. The Kentucky Society of Professional Engineers, as yet not affiliated with the NSPE, were gracious hosts to the engineers from across the nation.

Many social affairs highlighted the program. At luncheon on March 13, the engineers heard greetings by Lawrence Wetherby, Governor of the State and Dr. Philip Davidson, President of the University of Louisville. The speaker was Dwight A. Bray, P. E., Chief Engineer, Kentucky Department of Highways. At a banquet that night Mr. H. A. Wagner, Coordinator, Nuclear Power Development Dept., The Detroit Edison Co., gave the address.

The Saturday luncheon speaker was J. Stephen Watkins, P. E., Past President, Kentucky Society of Professional Engineers.

The business program covered more than a dozen items of interest to the Society and the profession. Leaders in various fields were on hand to direct discussions such as the one dealing with professional unity. Past President Alex Van Praag, Jr., NSPE's representative to the Exploratory Group of engineering societies studying unity, reported latest developments. Vice President Clarence Shoch and Ohio's National Director Robert Allen, the Society's observers at current Engineers' Joint Council meetings, told the presidents of the Council's activities. After these discussions, the Executive Committee, meeting on Sunday, March 15, authorized Vice President Shoch and Director Allen to represent the Society at future EJC meetings pending Board action in June on affiliation with the group.

Engineer Robert Allen, chairman of the Membership Committee, reported on the experimental program carried out in 1952. He told of mailings to a list of 5,000 prospective members from National Headquarters, and reviewed the Membership Kit that was made available to all State and Chapter workers. The State Presidents made many suggestions for future membership activities which were thought by the Committee to be of great value.

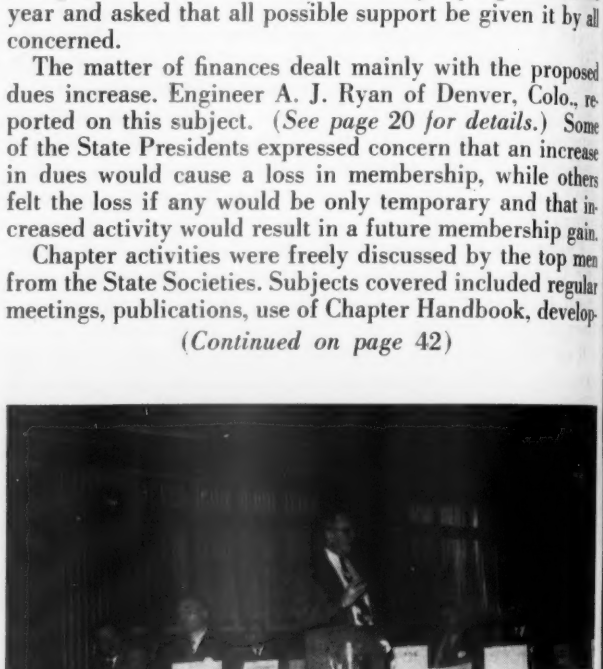
Past Vice President C. G. Roush, Chairman of the Public Relations Committee, reviewed for the group the Society's regular public relations activities as well as the special $50,000 program that was partially supported by membership contributions. He urged the officials to make all possible use of the two reports resulting from the special program up to this time. The reports are, "How to Improve Engineering-Management Communications," and, "The Improved Utilization of Engineering Manpower."

Much enthusiasm was indicated for the continued celebration of National Engineers' Week. The Presidents thought this celebration one of the major programs of the year and asked that all possible support be given it by all concerned.

The matter of finances dealt mainly with the proposed dues increase. Engineer A. J. Ryan of Denver, Colo., reported on this subject. (*See page* 20 *for details.*) Some of the State Presidents expressed concern that an increase in dues would cause a loss in membership, while others felt the loss if any would be only temporary and that increased activity would result in a future membership gain.

Chapter activities were freely discussed by the top men from the State Societies. Subjects covered included regular meetings, publications, use of Chapter Handbook, develop-

(*Continued on page* 42)



President C. T. Chave of the Massachusetts Society makes a point at one of the sessions.

Enjoying themselves are left to right: J. Stephen Watkins, Past Pres. Kentucky Society; Elgin Robertson, Nat'l Dir. from Texas; NSPE President Coleman; and R. C. Ernst, Pres., Kentucky Society.

President E. S. Van Demark tells his fellow engineers what is going on in the Delaware Society.

American U. Survey Reports College Seniors' Employment Attitudes

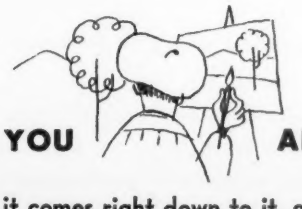
College Seniors and Federal Employment is both title and theme of a report just published by The American University of Washington, D. C. The 123-page monograph gives the findings resulting from a research study conducted in the spring of 1952 among college seniors majoring in mechanical, electrical, and civil engineering, physics, chemistry, economics, physchology, and political science primarily in order to determine their attitudes toward the possibility of accepting Federal employment as compared with industrial employment.

The study was financed by the Division of Psychological Sciences of the Office of Naval Research. The educational institutions chosen for the survey were: Johns Hopkins University, the University of West Virginia, Oberlin College, Syracuse University, and Purdue University. In addition to the students themselves, college placement officers, deans, other administrative officials, and faculty members familiar with student employment preferences and the recruitment efforts of organizations seeking college level talent also were interviewed.

A marked preference for industrial employment over all other types was shown by the seniors, and this preference was strongest among those majoring in engineering subjects with science majors next and the social science group third. While many factors, including employment fields of their fathers or guardians, influenced their attitudes, the over-all weight remained consistently in favor of industrial positions even where there was a family background of federal employment and individual students showed an inclination to federal jobs.

Less work "under pressure," job security, leave and retirement policies, good equipment for technical work, the probability of less discrimination against the individual, and geographic locations of federal positions were factors regarded with favor where federal positions were concerned. However, greater financial potential, management efficiency, and a greater incentive for the individual to work harder were among the principal reasons given for the industrial preference. There was considerable emphasis placed on the source of employment information as an influence on student attitudes, with the on-campus recruitment efforts of industrial representatives appearing most effective. For federal jobs, the college placement office and newspapers, radio, and television combined were regarded as the two most important sources.

The 1952 survey reported in the new American University monograph was preceded by a pilot study conducted during the spring semester of 1951 among engineering majors only at 6 leading schools.



ARE YOU AN ARTIST, TOO?

When it comes right down to it, engineering isn't such a far cry from art, and in some very practical cases the two professions even go hand in hand. You can't design a bridge, for instance, without having a pretty fair artistic sense; nor can you paint a very good picture without some knowledge of perspective and design.

We have an idea that a good many NSPE members are as talented with the brush and canvas as they are with the T-square and drawing board. So why hide those talents under a bushel?

Instead, why not send your American Engineer a good photo of your favorite painting so that we can feature it in a coming issue? And let us have a brief biographical sketch, too—What is your engineering specialty? And how or why did you take up your artistic endeavors?

Let's not leave it all to the statesmen and political scientists —Eisenhower, Churchill, and the rest. We'd like to show them that engineers can be artists, too. Let us hear from You.

Court Says Registration Board's Legislative Powers Invalidates Law

The Supreme Court of Colorado has ruled that the engineering registration law of that state is invalid because it contains an unconstitutional delegation of legislative power to the registration board. The decision followed an original action by an individual to restrain the board from issuing licenses and publishing a roster indicating the branch of registration.

The Court observed that it was not expressing any opinion on the question whether the profession of engineering is subject to regulation by classification into branches and for the purpose of the decision assumed that the profession might conceivably be regulated in that form. However, the Court found objectionable the broad language of the statute, stating, "No definition of any particular branch of engineering is contained in the statute, and no standards are fixed and determined by which a classification could be made.

"No standards are fixed by the Act which shall be applied in determining the distinctions to be drawn between . . . various specializations of the broad field of engineering. Without question, many fundamental scientific principles are common to all of them, and every field of the profession overlaps into another. Without standards fixed by the law, the discretion to declare what the law is, is delegated to the board. This cannot legally be done."

In addition to the objection on designation of branches, the Court found objectionable the authority vested in the board to determine *approved* curriculum . . . *from a school or college approved by the Board* . . . engineering work *of a character satisfactory to the Board* . . . give credit for graduate study *at its discretion* . . . *lawful* practice . . . and other language of this nature granting discretionary powers in the Board. (Objectionable words in the decision are shown in italic.)

The Court cited the rule of law it was following as: "The general assembly may not delegate the power to make a law; but it may delegate power to determine some fact or a state of things upon which the law, as prescribed, depends." And further, "The true distinction . . . is between the delegation of power to make the law, which necessarily involves a discretion as to what it shall be, and confer-

(*Continued on page* 36)

(Continued from page 10)

22 per cent fitting into this classification. The next largest group—15 per cent—were doing work designated as "operation." The third group—13 per cent—were chiefly engaged in administration.

Design was the most frequently reported job assignment of the mechanical engineers. In chemical engineering, research was the most commonly reported function. Research, operation, and production were most often reported by mining and metallurgical engineers.

Graduate degrees were most important to qualification for teaching, with 74 per cent of the engineering professors holding them. More than 40 per cent of the men engaged in research also had advanced degrees.

Professional Income

● In considering the income data assembled through the survey, the Bureau emphasizes that many economic and personal factors, such as ability, personality, and family or business connections, cannot be measured in statistical terms. However, the influence of other important factors, including education, length of experience as measured by age, specialty, and type of employer, was taken into consideration in compiling the report.

The income question was marked "optional," but close to 80 per cent of all respondents included the desired data. The income information from those under 35 years of age was not considered sufficiently representative to warrant analysis, however; so their replies were not included.

The figures used covered all types of professional earnings, whether from fees, salaries, or royalties, but excluded other types of income, such as returns on investments. An increase of approximately 37 per cent was shown in the 1949-50 median income figure of $8,100 for engineers aged 35 or over when compared with the last available previous figure of $5,900 in 1943. Earnings are known to have increased substantially, however, since the survey was made; so the value of the findings is historical rather than indicative of current 1953 conditions.

The influence of age and professional experience was shown as a definite factor in determining engineers' income. Median incomes mounted steadily with age, from $7,000 for engineers in the 35-39 bracket to a peak of $10,200 for those in the 60-64 group. For still older engineers the income levels were silghtly lower.

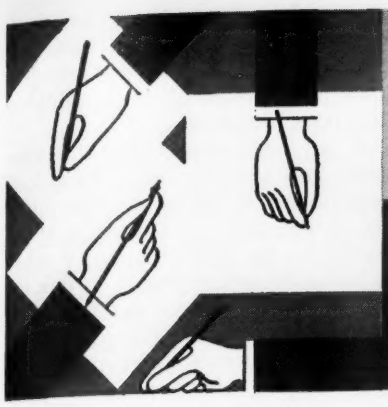
Earnings tended to be considerably higher in certain branches of engineering, with the highest median incomes found in chemical engineering and in a group comprised of management, petroleum and fuels, guided missiles, and nuclear reactor enginering specialists. The lowest over-all median income ($7,100) was found among the civil engineers.

An obvious earning advantage in all fields and in the profession as a whole was shown for the small group of engineers with doctorates.

The self-employed engineers were by far the best off financially, while those in private industry had the next best incomes. Members of educational and governmental staffs were much lower on the income scale. There was a higher median figure for all engineers employed by educational institutions than for those employed by the government, probably due largely to the greater proportion of Ph.D.'s on college faculties. When the median for the Ph.D.'s was figured exclusively, however, the governmental figure was higher by $400 ($8,700 for government Ph.D's, opposed to $8,300 for professors). The same was generally true for those with master's degrees.

Because of the fairly rigid ceilings on salaries in government and education, the older engineers in those fields had only moderately higher earnings than their younger colleagues, whereas the difference was much greater in the self-employed categories. The incomes of independent consultants showed some decline after 54 years of age, but it is probable that some of these older consultants worked only on a part-time basis.

The engineers who were in business for themselves tended to have higher incomes if they had a college degree. Although the most highly educated engineers generally tended to be the best paid in every employment classification, the variations of income among men with different levels of education within each group were not nearly as great as between those who were self-employed and those who were employed by others. Thus, of all the factors affecting engineering income, the type of employer was the one which obviously carried the greatest weight.



Professional POSTSCRIPTS

HAPPY springtime! If you've been busy these winter evenings before the TV set, probably warm weather and a hammock in the shade, will afford you some time to catch up on your professional reading. Remember, —PP— always has at least one item that will interest you. Here's a sample: Title: "Human First, Engineer Second." It's sent in by Harold Becher, P.E., of our NYSSPE. Here's Engineer Becher.

—PP—

Engineers Wanted!

Not a day passes without this line staring at me from the Want Ad pages of the daily press.

It must be wonderful to feel wanted. Modern psychology dwells on the sense of being wanted as one of the most important factors in the development of man.

It must be grand to feel wanted!

In vain do I search the Ad pages for the caption "Lawyers Wanted" or "Doctors Wanted." I sympathize with the lawyers and doctors. Theirs must be the awful lot to be unwanted.

We, the engineers are wanted!

But wanted by whom?

Wanted by a car salesman who left his own bailiwick to conduct a design and engineering service.

Wanted by a former dress buyer who opened an agency to rent out the services of engineers who do not know their own functions to clients who do not know their own needs.

Wanted for what?

Wanted for their many years of training, for their decades of experience, for their and their parents' sacrificial investments in their acquisition of knowledge—to perform tasks that can be done by a high school junior or by a graduate of a six months course in a trade school.

Wanted for their loyalty, integrity and thoroughness for five weeks of each quarter year at wage levels below those of a second rate machinist, without reciprocal obligations by the employer.

Do I sound irked and bitter? It is not my own wounds that I lick. I have not had the fortune to be one of the "Wanted engineers." I am haunted by the confusion and frustration that I read in the eyes of colleagues and hear in the stories of young and old engineers who apply to me for jobs.

My heart bleeds for their sense of insecurity, for their fears and their inertia.

Because I am jealous of my profession.

I am as jealous as the author who wants to be identified with the work of his brain and as the artist who wants to be identified with the work of his hands. Like them I abhor plagiarists and pirates.

"Of Human Bondage" bears the name of the author, Somerset Maugham, not the name of the publisher who bought the manuscript.

"The Lady of the Lake" is identified with Sir Walter Scott, and not with the publisher.

The portrait "Anne of Cleves" is known as a Holbein, not as a Henry VIII after him who ordered it painted.

Michelangelo's works bear his name, not the name of the pope who paid for their execution.

Syndromes are named after the medical practitioners who diagnosed them, not after the patients who paid for the treatments.

Famous legal decisions are credited to Webster, Choate, Darrow and Steuer, not to the litigants who footed the bills.

But where are the names of the engineers who executed the design and construction of the Pyramid of Cheops (the Egyptian monarch who ordered it), the Taj Mahal, the Mausoleum of Semiramis, the Woolworth Building, the Empire State Building, the Rockefeller Plaza, the George Washington Bridge (Note: G. W., albeit an engineer, had nothing to do with its design or construction)? Why are not their names, like those of the author, artist, doctor and lawyer identified with the work of their brain or hands?

It is because the engineer has not emphasized his human relationship with his work. He looks upon his work as an end in itself rather than as a link in the chain of human progress. The doctor deals with human pains, the lawyer with human troubles, the author with human social interpretation, the artist with human esthetic sense, most of them dedicating their drives and urges directly to human progress, sentient of human desires and needs.

It is for this reason that their work has, for several millenia, been defined by a code that imposes rigid moral demands on the use of their profession or art. The code demands the unrestrained giving of their best abilities and the consciousness of maintaining high standards of reputation. The code prohibits the lowering of their standards. They have a professional responsibility to the buyer of their work or service. They are not for hire by the hour. Their reward is for the service rendered and for the merits of that service.

And therein lies the differentiation of the Professional Engineer from the average member of the craft. The engineer who accepts professional status must realize the human values in his work. His responsibility to his client or employer is linked with the maintenance of high standards in his profession and with his own human dignity. He is not a true professional engineer unless he maintains this triple link at the highest levels. He will seek the employment of the maximum of his capabilities, worthy of justifying the time and expense spent on their acquisition. He will not let himself become a foil for non-professional racketeers who lower the standards and earnings of the engineering profession. He will appoint himself a missionary to teach the employer and client the true values and capabilities of the engineer. He will remember that the bridge he designs is for human transportation, the building for human residence, the machine for human economy and the device for human safety. He will learn that the reward for the execution of a task is measured by the challenge to his abilities and the risk to his reputation. He will insist on giving his name to his work.

The task is not an easy one. Not to stoop and kneel to pick up crumbs may mean to go hungry very often. But, if we are to make rapid gains in the battle for public acceptance we can do so only by putting ourselves in step with the other members of our profession whose goals are set forward, who keep their heads high and from their purposes are undeterred.

Polonius' famous bit of advice "to

thine own self be true" is good to be remembered by the engineer. If he will take inventory of the qualities to like in himself, if he will feel respect and dignity in himself, if he will remember that there is a better market for the best of his abilities, if he will realize that the employer or client is only furnishing the problems, looking to him to furnish solutions, he will lose the feelings of inferiority, inadequacy and insecurity. He will replace inertia with action and fears with courage. He will then surely find himself a really "wanted" engineer.

Just remember to be human first and engineer second.

—PP—

Thank you Engineer Becher. Our next "writin' " guest is Engineer Elmer N. Iberg of Marion, Ky. Engineer Iberg has the subject of professional ethics on his mind, and he has set them forth in "Five Points." He strikes at the roots of several problems; do you agree with what he says? Here, then, is Engineer Iberg's Point Five program.

—PP—

As that which is ethical, will redound to the benefit of those who are initiating and promoting observance of ethical practices and defining ethical practices, they may well be called to task for promoting their own interests.

There is no criterion of ethical action or professional conduct except that such action results in the public welfare. The public interest and the public protection are the only justification for a truly Professional Organization; the only basis for its support or recognition by the public; and the only basis for its survival.

Without fear of criticism, definition of ethical or unethical practice can be made public, and brought to the attention of the public and the courts. Sufficient laws are already established to cover most violations. When convinced that practices are advantageous to the public, and convinced of the integrity of those promoting ethical practices, the courts will not be derelict in their duties. In the understanding of human affairs, and the public weal, other groups are decades ahead of the Engineering Profession. Obsolete courts can be ridiculed into supporting sound views. The precedent is already established in most states.

Resolutions should be immediately taken and publicized of current and local unethical practices, with no punches pulled. Local, is emphasized because the National Society and other groups are years in advance of local thinking.

1. The definition of Professional Engineer must be established, and legal steps taken, irrespective of all precedent, to restrict its use. Specifically, any implication that an engineman, operator, surveyor, draftsman, technician, etc., is an Engineer of any kind, must be removed legally. If not successful in this, a new and restricted definition must be established.

2. The current and predominant practice of Salesmen giving free service, called "Engineering Service," must be defined as unethical. It is merely a means of pawning off a company's product for a profit. A delicate distinction must be made of those companies who utilize professional engineers exclusively to give professional advice, be it billed as such or not.

3. There is limited advertising of and practicing of Engineering by unlicensed individuals. There is plenty of room under the law, for individuals of any background or training, to establish their competence to practice. They should be urged to comply, or such practice brought to the attention of legal authorities. This malpractice is not serious for the simple reason that it has not been sufficiently profitable to attract violators.

4. All legal requirements for adequate and complete planning before construction should be a prime interest of the Society. Engineers alone should be the sole criterion of what is adequate and necessary in this instance. Improved laws in this respect are greatly needed. The practice of calling in a contracting firm to do a job without adequate or complete plans is as obsolete as any practice known to civilized man. It is responsible for the vermin-infested, fire traps of this country—including some of the schools. The production of plans and specifications, which is no more than an absolute definition of every item to enter into a structure and how to use it, must be regarded as the highest type of Engineering effort. By the non-recognition of this fact, American Engineering has suffered beyond hope of repair in any of our lifetimes. Even educators have miserably failed on this item of professional endeavor.

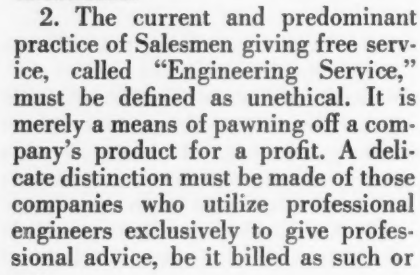
5. The control of Engineering functions by Engineering Companies dominated by other than Engineers, is unethical and contrary to the public welfare. Policies affecting Engineering dictated by bankers, financiers, politicians, commercial experts, business men, militarists, etc. are not in the public interest, and forever remove all possibility of professional development for Engineers. Such policies will reduce the greatest potential Engineers to dawdling technicians.

—PP—

Unity of the Engineering Profession is such a complex subject, and yet so important, that many members of NSPE (truly a grass-roots organization) have taken it to their hearts enough to think and write about it. The piece that follows by Engineer Sim C. Wright of the Oklahoma Society is from such a member. A portion of what follows has been said before and should be considered as review; the rest is a call to action.

—PP—

The need for unity has long been recognized by the engineering profession. Who's Who in Engineering lists over 70 national engineering societies. There are at the present time approximately 175,000 registered engineers and somewhat over 350,000 practicing engineers. In other words approximately one-half of the practicing



(EDITOR'S NOTE: *All those desiring to list their meetings under Dates to Remember should send* COMPLETE *information, including date and place, directly to the American Engineer.*)

New Jersey Society of Professional Engineers—Annual Meeting, April 17, 18. Essex House, Newark, New Jersey.

Michigan Society of Professional Engineers—Annual Meeting, April 17, 18. Bancroft Hotel, Saginaw, Michigan.

New York State Society of Professional Engineers — Annual Meeting, April 23, 24, 25. Hotel New Yorker, New York, New York.

Massachusetts Society of Professional Engineers — Annual Meeting, May 9. Hotel Kenmore, Boston, Massachusetts.

Pennsylvania Society of Professional Engineers—Annual Meeting, May 15, 16 Penn-Harris Hotel, Harrisburg, Pennsylvania.

Rhode Island Society of Professional Engineers — Annual Meeting, May 19. Rhode Island Yacht Club, Providence, Rhode Island.

California Society of Professional Engineers—Annual Meeting, June 4, 5, 6. Hotel Californian, Fresno, California.

Georgia Society of Professional Engineers—Seventh Annual Summer Outing, June 15, 16. King and Prince Hotel, Saint Simons Island, Georgia.

National Society of Professional Engineers—Annual Meeting, June 18, 19, 20. Sheraton-Beach Hotel, Daytona Beach, Florida.

engineers in the United States are registered professional engineers. . . .

The founder societies have been performing a commendable job of disseminating technical information to their membership, and there is no intention to disturb this relationship. However, it is recognized that these organizations do not represent the entire engineering profession and, therefore, cannot fulfill the need for group action. Group action was required to prevent the submergence of engineers into general labor unions when the Wagner Labor Act was replaced several years ago. Unified effort was needed to establish our engineering registration laws to safeguard public health, safety, and property. Unity in the profession is also needed to improve the academic standards of our colleges and universities. At the present time there are 192 schools teaching engineering subjects of which 44 are not accredited. While it is hard to understand how an engineering student would attend a university which is not accredited, it should be the duty of the profession to see that this is corrected. . . .

There have been a number of attempts at unity in the engineering profession. The American Association of Engineers (A.A.E.) was formed in 1915. Although it exists today with about 6,000 members, it did not accomplish the original purpose because it lacked the backing of the technical societies. The Engineering Council for Professional Development (E.C.-P.D.) was formed in 1932. This organization has done good work with its principal accomplishment, the establishment of better academic standards. The National Society of Professional Engineers (N.S.P.E.) was established in 1934 and now has a membership of about 29,000. N.S.-P.E. is expanding rapidly and doing fine work, but at the present time represents only 16 per cent of the registered engineers or about 8 per cent of the practicing engineers. There are three founder societies larger than the N.S.P.E.—the A.I.E.E. with 45,000 members, the A.S.M.E. with 37,000 members, and the AS.C.E. with 36,000 members. In 1920 the American Engineering Council was organized by the national mining, mechanical, and electrical engineering societies (the civil engineers not participating until about 10 years later) and other national and local societies. This organization failed in 1940 because two of the supporting societies gave notice of their intentions to withdraw.

At the beginning of World War II the engineering profession found itself in the position that there was no overall organization which could advise and assist the various government agencies in a national emergency. The need was paramount and the Engineers Joint Council (E.J.C.) was formed in 1941 as a federation of the civil, mechanical, mining, electrical, and chemical societies.

The Engineers Joint Council in October, 1949, formed the "Exploratory Group" which consisted of representatives from 16 technical societies. The purpose of this Exploratory Group was to find a common basis on which the engineering profession could be unified and the following plans were adopted as a basis for discussion:

Plan A—the expansion of Engineers Joint Council (E.J.C.) to include other engineering societies.

Plan B—expansion of E.J.C. to include other societies and also to provide for a voluntary individual membership.

Plan C—the merger of E.J.C. and the National Society of Professional Engineers (N.S.P.E.), modified so that the resulting organization would represent the entire engineering profession.

Plan D—adoption of N.S.P.E. as the unity organization and expansion of its membership and activities through the co-operation of other engineering societies.

After considerable study and deliberation by the Exploratory Group, Plan A was recommended in December, 1951, with the N.S.P.E. dissenting. On January 25, 1952, E.J.C. voted to receive the report and referred the matter to the constituent societies.

This is a comprehensive report and it represents a great deal of work on the part of the Exploratory Group, composed of leading engineers in the profession, in trying to find the answer to the problem of unity. The majority report can be summarized in the following statement:

"The thinking is that the unity organization should be launched in the simplest possible way and that the unsolved questions and problems should be studied and resolved by the unity organization rather than by a temporary group, such as the Exploratory Group."

The highlights of the N.S.P.E. minority report are:

"1. The failure to determine the relationship between N.S.P.E. and E.J.C. on programs in the social, economic, ethical, and governmental fields;

"2. The failure to provide for individual membership;

"3. The failure to provide authority for action;

"4. The failure to develop the finan-

(*Continued on page* 41)

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1953 Engineers' Week Roundup

THERE is no doubt that National Engineers' Week, 1953, was an outstanding success from every point of view—even bigger and better than last year's observance and an exciting preview of celebrations and accomplishments to come. A complete report on all events—radio broadcasts, TV shows, special exhibits, official proclamations, speeches, newspaper tributes, coinciding annual meetings, social programs—would require more space than the AMERICAN ENGINEER has pages. But here is a final rundown of many of the highlights as they have been reported from coast to coast. . . .

Many state governors issued proclamations or gave other official recognition. Among them were: Thomas E. Dewey, New York; J. Caleb Boggs, Delaware; G. Mennen Williams, Michigan; Christian A. Herter, Massachusetts; Robert E. Crosby, Nebraska; Edward F. Arn, Kansas; Howard Pyle, Arizona; and C. Elmer Anderson, Minnesota. . . .

Mayors throughout the country followed suit, including Perry Pickett, Midland, Tex.; Eric G. Hoyer, Minneapolis, Minn.; Vincent R. Impellitteri, New York City; Joseph M. Darst, St. Louis, Mo.; Ernest W. Mirrington, Jr., Niagara Falls, N. Y.; Hohen Foster, Phoenix, Ariz.; and Fred Emery, Tucson. . . .

Dewey's Tribute

Between the dream and its practical fulfillment stands the professional engineer. It is he who must take the knowledge which scientists wrest from the universe and out of it continuously create a new, a better, and a more friendly world. . . . In such a world, as productive capacity steadily increases and communications expand, hunger, fear, and ignorance cannot long endure nor can tyranny remain unchallenged.

—Governor Thomas E. Dewey
1953 Engineers' Week Proclamation

In Birmingham the Alabama SPE held its Annual Meeting and Banquet at which Donald K. Bryant, Alabama U. mechanical engineering student was presented with a plaque as winner of Society's annual essay contest. . . . University of Arkansas College of Engineering professors were included in a team of 25 engineeers who spoke throughout the state before high school groups and civic clubs. . . . Louis Fischer, noted author and correspondent, was the featured speaker at a Toledo, O., event. . . .

Most Unique Program

Members of the Lansing, Mich., Exchange Club heard a unique Engineers' Week program at their February 23 meeting, brought in by long-distance telephone and loudspeaker. National celebrities who gave the telephoned speeches included Michigan Governor G. Mennen Williams, Michigan U. President Harlan H. Hatcher, NSPE President John D. Coleman, atomic scientist Allen Bates, and bridge-builder D. B. Steinman.

Wesley Bintz, president of the Grand Valley MSPE Chapter planned and arranged the unusual event.

The Charleston, W. Va., Dallas, Tex., and Tulsa, Okla., Chapters were among those offering a week-long schedule of special events. . . . Representatives from various large companies spoke at the Charleston meetings. . . . NSPE President-elect T. Carr Forrest appeared on a Dallas TV program during which the local water situation was discussed. . . Joseph Barnett, chief of the Urban Roads Division, Bureau of Public Roads, was one of the featured lecturers in Tulsa. . . .

The Georgia Society's Ninth Annual Meeting in Atlanta, addressed by John D. Coleman, was another highlight of the Week. . . . President Coleman also appeared at the Annual Winter Meeting of the Professional Engineers of North Carolina in Charlotte. . . .

The San Antonio *Express* carried a special feature story, February 22, explaining the registration policy. . . . The Campbell, O., *Journal* ran a special appeal to high school students to consider engineering as a career. . . . The Portsmouth, O., Chapter's efforts resulted in a page of tribute in the *Times*. . . .

The Waukegan, Ill., Chamber of Commerce held a special recognition luncheon jointly with members of the Lake County Chapter. . . . The Rotary and Kiwanis Clubs in Springfield, Ill., also had special programs provided by Capital Chapter P.E.'s. . . . The District of Columbia Society arranged a radio and TV appearance by General Louis W. Prentiss, District Engineering Commissioner. . . . Dr. John B. Sutherland, acting director of the Kansas Industrial Development Commission, was featured speaker at a Topeka meeting. . . . KSPE President Abram Pratt appeared with other engineers on a special Topeka TV program. . . .

Among the special banquets held were those in Denver, Colo., Zanesville, O., Wichita, Kans., and Jacksonville, Fla. . . . Robert J. Cummins was honored as the "Engineer of the Year" at an award dinner sponsored by the San Jacinto Chapter, TSPE, at Houston's Shamrock Hotel. . . . The Bucks County Chapter, PSPE, arranged special broadcasts and displays in cities in the area. . . . Monmouth-Ocean Chapter engineers were interviewed over station WJLK in Asbury Park, N. J. . . .

The presentation of a special North Shore, Mass., Chapter award to Professsor Jonathan Karas was televised in the Boston area. . . . The Delaware SPE sponsored a full schedule of radio and TV programs for the Week. . . .

Connecticut Highlights

The Connecticut SPE's Annual Meeting on February 28 at the Francis S. Murphy Terminal, Bradley Field, Windsor Locks, Conn., featured addresses by two outstanding helicopter experts—Igor Sikorsky and Charles H. Kaman. A social program, dinner, and dance were also scheduled for this Engineers' Week observance.

New Mexico P.E.'s and their wives—Mr. and Mrs. J. Caldwell Wilson, Mr. and Mrs. Aubrey B. Gregg, Mr. Wilkes W. Gowin, and Mr. H. E. Samson—assisted by local radio personnel made recordings of both *The Dream Builder* and *The Leap in the Dark* for local broadcast. . . .

The Illinois SPE made arrangements with the National Association of Educational Broadcasters to distribute two NSPE tape-recorded programs to 44 student stations of the NAEB tape network. . . . All Indiana Chapters sponsored displays and programs, and ISPE President J. B. Wilson appeared on a TV interview with other Indianapolis P. E.'s. . . . *A Century of Engineering Progress in St. Louis* was the theme of a featured radio show in that city. . . . A special *Salute to the Engineeer* ran in the Macon, Georgia, *News* under the byline of columnist Walter Bragg. . . . February 22 to 28 was really a week when the Engineer came into his own.

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ENGINEERS' WEEK SCENES. Top row: Massachusetts' Governor Herter signs proclamation while J. J. Groncki, F. A. Sawyer, Clarence H. Westaway, and C. T. Chave look on, l. to r.; Governor Arn of Kansas (seated) presents proclamation to KSPE Pres. A. Pratt, and New York's Governor Dewey signs his proclamation before M. J. Roses, E. J. Nunan, and R. A. Wylie. Second row: Displays sponsored by the Albany and Monroe County Chapters, NYSSPE, respectively; Mayor E. W. Sanford, Altamont, N. Y., and G. W. Turnes are inspecting the first display. Third row: W. L. Bredar, D. P. DeBord, B. H. Backlund, and Nebraska Governor R. E. Crosby, l. to r., look over proclamation; D. K. Bryant receives essay award from Pres. H. K. Weaver, Alabama SPE; and Mich. Highway Commissioner C. Zigler, W. Bintz (at phone), Otto Hall, and S. Obrecht, pres., Lansing Exchange Club, are pictured during long-distance lecture program. Bottom row: A view of a dinner meeting at the Commodore Perry Hotel, Toledo, O., shows banners of all Toledo Technical Council members who joined in a tribute to engineers; and Mayor E. W. Mirrington, Jr., Niagara Falls, N. Y., signs a congratulatory letter before R. Simonette, W. F. Anderson, R. C. Newman, and D. O. Hubbard, l. to r.

With Our Members . . .

Minnesota Meeting

New Officers Named; Members Hear Address on State's Economic Future

W. L. Hinderman of St. Paul was named president of the Minnesota Society of Professional Engineers at the association's annual meeting held at the Lowry Hotel in St. Paul during National Engineers' Week. He will succeed Charles E. Doell in that office.

Other new officers named at the same time are: James J. Ryan, St. Paul, president-elect; C. W. Britzius, Deephaven Park, vice president; L. P. Zimmerman, Minneapolis, secretary; C. J. Hastad, Halstad, Minn., treasurer; and Hibbert M. Hill, Minneapolis, national director. They are scheduled to take over their new duties on May 1.

In a major address, Dr. Athelstan Spilhaus, dean of the Institute of Technology at the University of Minnesota, told the MSPE engineers and members of the Minnesota Federation of Engineering Societies, meeting at the same time, that long-range technological planning for the state's economic future must be developed and supported. He also pointed out that industrial activity centers around great scientific and engineering schools.

MSPE concluded its sessions by passing a resolution addressed to the proper committees of the State legislature endorsing Walter H. Wheeler for election to the Board of Regents of the University of Minnesota. An MSPE member and past National Director, Mr. Wheeler was presented with an "Outstanding Achievement Award" by the University in May, 1952.

Legislative Dinner In Springfield, Ill.

The annual Legislative Dinner, honoring engineers serving in the State legislature, was held under the auspices of the Capital Chapter of the Illinois SPE on March 16. The Leland Hotel in Springfield was the scene of the event. In addition to the State legislators, the Governor, the deans of the engineering colleges at the University of Illinois, Bradley University, the Illinois Institute of Technology, and Northwestern University, State Department Directors, and technical agency heads were invited to attend.

Movie Shown In Stockton, Calif.

At a recent regular monthly meeting of the San Joaquin Chapter of the California SPE, held at the Hotel Wolfe in Stockton, the General Electric movie—*Freedom and Power*—was shown to the members and their guests.

Cleveland Dinner Guests

Pictured, left to right, at the Annual Dinner of the Cleveland Chapter, OSPE, are: John D. Coleman, NSPE president; George V. Fleck, retiring Cleveland president; James E. Atchison, new chapter president; and Raymond A. Freese, Ohio SPE president.

Educational Activities In Massachusetts

The Education Committee of the North Shore Chapter of the Massachusetts Society of Professional Engineers, composed of F. O. MacFee, Jr., E. F. Hansen, and R. E. Franck, has been conducting an effective program in the high schools in the North Shore area. Assistance has been offered to the schools in giving prospective engineering students an accurate picture of the profession, the type of work engineers perform, and the facilities and equipment which is used.

The chapter has also been cooperating in the vocational guidance program being carried out by Northeastern University to reach forty-two high schools in the Greater Boston area. Lectures have been given in thirteen schools on the subject, *What Engineers Do and Where They Work*.

North Central Ohio Committeemen Named

Committees for the North Central Chapter of the Ohio SPE have been named as follows by Chapter President Edwin E. Richards: *Program*—C. B. Parrett, chairman; R. M. Barkley, W. R. Hauserman, Walter Metzler, and Howard Maxheimer. *Public Relations*—A. D. McKenzie, chairman; John T. McClure, Edwin M. Kerr, Frank A. Schneider, and John J. Cunning. *Membership*—N. A. Stegman, chairman; Sidney C. Buchner, Robert Burgener, and Chris Schneider. *Ethics and Grievance*—Edgar R. Johnston, chairman; Robert G. Beer, and James W. Kyler. *Advertising Representatives*—R. C. Klopfenstine, chairman; Harold H. Slater, John W. Huffman, and Clarence C. Crow.

Atomic Energy Talk In Augusta

At a recently-scheduled monthly meeting of the Augusta Chapter of the Georgia SPE, held at the Town Tavern Restaurant, Mr. N. J. Donohue, a member of the Atomic Energy Commission's technical staff, gave a lecture on *The Atomic Energy Program and Its Relation to the Professional Engineer*. The developments made so far, predictions as to the future development of electric power with the atomic reactors, and economic and safety aspects were among the phases of the program covered by the speaker. At the conclusion of the address, the meeting was opened to questions from the floor.

NYSSPE Convention Scheduled For April

The Twenty-seventh Annual Convention of the New York State SPE will be held April 23, 24, and 25 at the Hotel New Yorker, New York City, it has been announced by Convention Chairman E. J. Quirin. An Engineering Industries Exhibition is scheduled as a special feature.

More than 1,000 New York State P.E.'s are expected to attend. In addition to the industries exhibition and the business meetings, open forum discussions on subjects of public interest are planned.

1953-54 NSPE Slate

Results of NSPE's election of officers for the 1953-54 administrative year have just been reported to the Board of Directors by the Tellers Committee. T. Carr Forrest, Jr., was elected to the presidency of the Society for the term beginning next July 1. Vice Presidents were named as follows: Northeastern Area, Clarence T. Shoch; Southeastern Area, Dean N. W. Dougherty; Central Area, Edwin W. Seeger; Northcentral Area, C. Y. Thomas; Southwestern Area, Alfred J. Ryan; and Western Area, Orland C. Mayer. In addition, Russell B. Allen was re-elected Treasurer.

Michael Godfrey served as chairman of the Tellers Committee. Other members were: Thomas M. Knight, Joseph Barnett, Victor J. Richter, Joseph Powers, and Henry W. Clark.

The election results were tabulated as follows:

Officers:	
For President:	
T. Carr Forrest, Jr.	9,578
Write in for others	14
For Vice Presidents:	
Northeastern Area:	
Clarence T. Shoch	9,431
Write in for others	15
Southeastern Area:	
Dean N. W. Dougherty	9,361
Write in for others	10
Central Area:	
Edwin W. Seeger	9,397
Write in for others	3
Northcentral Area:	
C. Y. Thomas	9,402
Write in for others	9
Southwestern Area:	
Alfred J. Ryan	9,363
Write in for others	6
Western Area:	
Orland C. Mayer	9,325
Write in for others	4
For Treasurer:	
Russell B. Allen	9,471
Write in for others	7
Invalid and Blank ballots	146
GENERAL	
Total ballots cast	9,781
Membership as of Dec. 31, 1952	25,928
Percentage of membership casting ballots	37.6%

CORRECTION—The March issue of the AMERICAN ENGINEER carried a story on page 30 referring to the Kentucky Society of Professional Engineers. The reference should have been to the Kentucky Lake Chapter of the State Society, rather than to the KSPE itself.

NYSSPE Ladies' Program Committee

Pictured above are the members of the Ladies' Program Arrangement Committee for the New York State Convention, April 23-25. In the first row, left to right, are Lillian M. Lawrie, Sylvia M. Lane, Ann Lorie, and Sonia Cavagnet; in the second row are Mary Casulli, Eva Klepper, and Alice Fox.

Diamond Jubilee

Ohio SPE Celebrates 75 Years Of Progress and Accomplishment

Tracing its history back to the informal beginnings during 1878 of the Association of County Surveyors of Ohio, the OSPE held its Diamond Jubilee Convention at Neil House in Columbus, March 5, 6 and 7.

Addresses by nationally-known speakers, panel discussions, a tour of the Battelle Memorial Institute, special conferences for E.I.T.'s and student engineers, industrial exhibits, and varied social programs for both the P.E.'s and their ladies were high points of the meeting.

Among the featured speakers were: NSPE President John D. Coleman; Robert B. Bangham of the Ohio Society of Professional Accountants; T. A. Marshall, a member of the Engineering Manpower Commission; Dr. Walter E. Lawson of the Development and Research Department, E. I. du-Pont de Nemours & Company; Henry K. Leonard, president of the Toledo Patent Law Association; Army Engineer Col. Paschal N. Strong; J. A. Flint, vice president in charge of engineering for the Jeffrey Manufacturing Company; and Dr. W. E. Smith, dean of the Graduate School, Miami University. The panel discussions dealt primarily with the problems encountered by county, municipal, highway, industrial, public utilities, and privately practicing engineers. A special OSPE citation and award was presented to P.E. Luther T. Fawcett as another feature of the program.

Raymond A. Freese, outgoing OSPE president, presided. Members of the Franklin County Chapter were convention hosts.

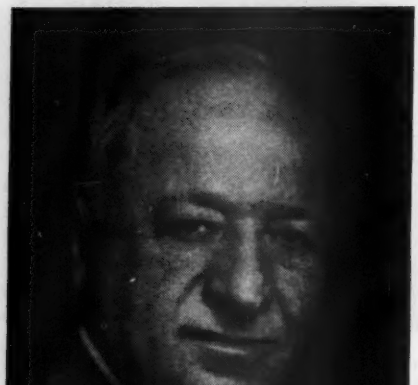
Dayton P.E.'s Sponsor TV Program

The Dayton, Ohio, SPE has recently participated with the other member groups of the Dayton Technical Societies Council in a series of sixteen TV shows, generally entitled *Blueprints for Tomorrow* and covering all phases of engineering.

Dayton Chapter members Albert Fink, Carl Lohrey, Robert Allen, and Robert Menninger and University of Dayton Student Chapter member Fred Kramer provided the final program of the series. Their televised discussion centered on the education, experience, and qualities requisite for an engineer; emphasized the importance of professional registration; and covered the history, objectives, and make-up of the Professional Society and future prospects for engineers and engineering. Visual props including antique whale-oil lamps, photos of local engineering projects, various graphs and charts, and two scale model kitchens representing the modern and the old-fashioned types were used in presenting the engineering story.

NYSSPE Member Honored By Cooper Union Alumni

William Goldsmith, a former Commissioner of Public Works in Yonkers, N. Y., and a member of the New York State SPE, was an honored guest



at the Cooper Union Alumni Association's annual Founder's Day Dinner recently. Mr. Goldsmith, who has been chairman of the Cooper Union Alumni Fund since 1951, was presented with a plaque in recognition of his outstandingly successful fund-raising efforts.

He is currently active as president of the Woodcrest Construction Company which he founded in 1928.

Arizona Annual Meeting

The 1953 Annual Meeting of the Arizona Society of Professional Engineers was held March 7 in Tucson at the Student Union Building of the University of Arizona. Engineer Bartholomew of the Southern Chapter was general chairman in charge of the arrangements for the meeting and presented a varied program for those in attendance.

One of the highlights of the meeting was the presentation of certificates of registration to engineers newly registered in the State. The registrants attended as guests of the Society, as did senior engineering students from the University.

Engineer's Responsibility Is Galveston Subject

The Engineer's Responsibility was the subject chosen by Howard T. Tellepsen for a lecture he recently delivered before a dinner meeting of the Galveston County Chapter of the Texas SPE. Mr. Tellepsen, president of the Tellepsen Construction Company, is a past president of the San Jacinto Chapter, TSPE.

Colorado Case

(*Continued from page* 27)

ring authority or discretion as to its execution, to be exercised under and in pursuance of the law. The first cannot be done; to the latter no valid objection can be made."

The right to practice a profession, once legally granted, is within the rights protected by the Constitution of the United States and of the State of Colorado, which provide that no person shall be deprived of life, liberty or property, without due process of law, the Court held. "The profession of engineering is no 'ordinary trade or calling.' That profession also involves 'personal skill, presupposes a period of novitiate, intensive preparation, due examination and admission, and that the licentiate's sheepskin is solely his own.' " The Court quoted approvingly a statement from an Idaho case, "Where the State confers a license upon an individual to practice a profession, trade or occupation, such license becomes a valuable personal right which cannot be denied or abridged in any manner except after due notice and a fair and impartial hearing before an unbiased tribunal."

Following this reasoning, the Court concluded that the complainant had been denied a valuable property right because he had been originally licensed to practice the profession of engineering without designation of branch under an earlier law. "It follows, therefore, that the legislature cannot by statute deny or abridge that right in any manner except for cause and 'after due notice and a fair and impartial hearing before an unbiased tribunal.' "

A request for a rehearing has been filed with the Supreme Court by the registration board.

P.E.'s At Work

A number of position changes among NSPE members have recently been noted. . . . Charles G. Bourgin has resigned as superintendent and engineer of the Montclair, N. J., Water Bureau to take up new duties as engineer and general manager of the East Orange Water Department and secretary of the Board of Water Commissioners of East Orange. . . . Karl Hellman has recently taken over as electrical supervisor in charge of design for Hydrocarbon Research, Inc., of New York City. . . . William A. Chalkley, formerly plant engineer with Rohm and Hass Company, has joined the firm of Cooper and Perry, Knoxville, Tenn., which in the future will be known as Cooper, Perry, and Chalkley, Architects-Engineers. . . . Bert W. Johnson, Donald B. Johnson, Earl A. Krueger, and Willard W. Warzyn, all of Madison, Wis., have been admitted to membership in the firm of Mead and Hunt, Inc. . . . Mark P. Harris has joined the faculty of Pennsylvania Military College as a professor of civil engineering.

Oregon Court Upholds Registration In County Surveyor Case

In a decision handed down January 22, 1953, the Multnomah County Circuit Court of Oregon declared Peter W. Welch unqualified to hold the office of Multnomah County Surveyor notwithstanding the fact that he had been elected to that office at the November 4, 1952, general election.

The suit to challenge the qualifications of Welch was filed by the Multnomah County District Attorney on the basis of the law passed by the Legislature in 1949 providing that no person shall be eligible to hold the office of County Surveyor unless he is registered as a professional engineer or professional land surveyor. Welch was registered neither as an engineer nor as a land surveyor, and after having been elected to the office, contended that the law of 1949 was unconstitutional. The attorney for Welch argued that since the office of County Surveyor was created by the Oregon Constitution it was improper for the Legislature to establish special qualifications for any individual holding such office and that additional qualifications could be provided for only by amendment to the constitution itself.

The District Attorney pointed out that where the constitution of a state is silent as to the qualifications for any office or only specifies negative qualifications, as in the case of the Oregon Constitution, it is entirely within the power of the Legislature to add additional qualifications as are reasonable and proper to insure adequate and competent discharge of the duties of the encumbent.

The opinion affirms the reasoning put forth by the District Attorney holding the 1949 law constitutional and declaring that Peter Welch, not possessing the qualifications therein required, may not hold or occupy the office of County Surveyor of Multnomah County and that Claude G. Powers the previous County Surveyor was entitled to occupancy and control of the office.

It is understood that Welch intends to file an appeal with the Supreme Court at Salem in an effort to seek a reversal of the Multnomah County Circuit Court decision.

What's New

This column describes new products of general interest to professional engineers. For further information, fill in the coupon provided and mail to the AMERICAN ENGINEER.

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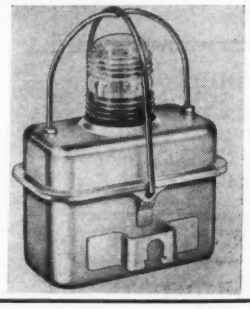

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NEW SUN HEAT CALCULATOR *Item 2*

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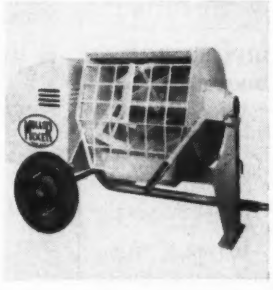
NEW MIXERS *Item 3*



Muller Machinery has introduced three new plaster and mortar mixers. All three incorporate paddle shaft seal originated by Muller. Manufacturer states this seal gives positive bearing protection and guarantees seal unconditionally for life of mixer. Model 120 shown has double V belt drive.

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Briefs

(*Continued from page* 7)

of the nation when wage and salary controls applied, and stated that such firms in many instances lost their experienced and valuable engineering employees because of salary limitations. The larger commercial and industrial firms had long-established organizational plans by means of which deserving persons could be promoted to work with a different title or description when merit and effort had been sufficiently demonstrated, he said. But the smaller firms could not compete on this basis and thus reward their engineering employees even though they were willing to match the salary offers to retain their key engineering personnel, he stated.

Another difficult problem arising out of salary control, the NSPE Executive Director said, and which particularly affected industry, was the practice known as "flesh-peddling" which brought into being organizations which were in essence employment agencies. "These organizations enticed engineers employed in defense industries, in most cases, to leave their jobs, sign up with the organization, and then the organization would offer the services of these same engineers back to industry and often to the same former employer, on a per diem rate, plus certain supplemental direct and indirect allowances, such as lodging, travel, etc. Of course, the cost was invariably higher to the employer and the organization making such arrangements received a stipulated fee or percentage as its share." As many of these cases involved government contractors the government was paying a large part of the added expense, it was pointed out.

At the hearing, Senator John W. Bricker, (R., Ohio), who led the fight for the exemption of professional engineers last year, observed that the decontrol action had stimulated the enrollment of engineering students as he had predicted last year and noted that the decontrol action has not had any adverse effects since it became effective last July 1st.

Commenting on a statement made by Senator Ralph E. Flanders, (R., Vt.), on the floor of the Senate last summer during the debate on the exemption of professional engineers, pointing out the basic differences between a professional engineer and a technical worker, Robbins said,

"This statement by Senator Flanders goes to the heart of the basic concept underlying the exemption of professional persons, be they doctors, lawyers, architects or engineers. This

(*Continued on page* 41)

Letters

(*Continued from page* 5)

electrical and heating and ventilating branches as they affect buildings for human use and occupancy. On the other hand, while the candidate for engineering registration may be more thoroughly examined in fundamentals of mathematics and physics, he is seldom expected to know anything about the cultural needs of people relative to structures, nor is he examined in those fields.

One of the cardinal principles of the engineering profession is that an Engineer shall not undertake to render professional services in any of the many diverse branches of engineering or in any related profession for which he is not qualified by training and experience. Where there is any doubt as to his qualification, he should be ready at all times to submit to examination, furnish proof of experience, or establish proof of his ability by other means. Only in this way can the professional dignity of his field be maintained and the public interest protected. All of us, as professional engineers, should keep the *obligation of ability* in mind, and The American Engineer, fostering the professional attitude in engineering, should encourage its members to excel in their fields of specialized work and to broaden their base of technical and general knowledge.

It is not the purpose of this letter to defend one profession from inroads upon it by one so closely related as engineering is to architecture, but rather to point out that no public or professional interest has been served by the manner in which you reviewed the Tennessee case. Only by training and experience in each of these two great professions can one appreciate the distinct and great contributions which each field has made and will continue to make toward the realization of a better future.

John W. Hargrave, A.I.A., P.E.,
Montgomery, O.

► We are sorry that Engineer Hargrave feels that the headline and the story itself give the impression that what has happened in Tennessee is also likely in any other state. Again, we regret that he feels the piece may harm interprofessional unity.

Upon re-reading the story and the headline as it appeared in the magazine, though, we must say that we believe a competent reporting job was done. The story in the magazine was simply a factual account of what the court said and we felt that it was incumbent upon us to reflect the court's views and comments without presenting our own personal viewpoint. It is unfortunate, perhaps, that the court's language is so broad as to give the impression feared.—*Editor.*

Story . . .

Dear Editor:

Here is a thought that might be of interest to those interested in membership in our society. It might be included in the American Engineer for others to see.

An alert and robust Cornell student asked of her engineer father, "Daddy have you joined your professional society, as you have been talking about doing for so long?"

Pop replied, "No, not yet."

The student said, "Daddy, we are living in a day of group action, the world will begin to pass you by if you don't get in and pitch; then you can use your good influence in the direction you want things to move."

Join your Professional Society and become a greater influence in your community!

Very truly yours,
Burton E. Anderson, P.E.,
New York, N. Y.

In the Navy . . .

Dear Editor:

For the past few years much attention has been focused on acute shortage of technical and scientific personnel, and in that regard a great deal has been said regarding the "proper utilization" of engineers in industry and military circles. I am presenting my experience with the Navy in this respect.

In October, 1950, I was recalled to active duty with the Navy. Inasmuch as I had about 5 years experience in diesel engine design and development and allied mechanical engineering phases, I felt I could better assist the service by applying my talents to Navy's design and development program with the Bureau of Ships. I formulated a letter requesting a change of duty from destroyer duty to the Bureau of Ships and sent it to my C.O. for transmittal through the chain of command to the Bureau of Personnel. This letter was never forwarded and by devious means I later discovered it was politely pigeon-holed in the waste basket.

Time went on and I finally completed my tour of duty with the Navy. After my return to civilian status I again sent my request to the Bureau of Personnel via the district commandant. This request indicated my desire to obtain an officer specialist classification in engineering. The district commandant approved my request and forwarded it to the Bureau of Ships which recommended approval. The Bureau of Personnel acted in the negative with a trite form letter indicating the Navy has a sufficient number of officers in the Naval Reserve of this specialist classification to meet anticipated requirements for mobilization. This reply appears to be contradictory to all Office of Defense efforts to recruit these talents.

My contention is that proper analysis and action in some top level planning is not being effected.

Your comments are solicited and shall be appreciated.

S. A. Kraly, P.E.,
Milwaukee, Wisconsin

► The *American Engineer* has often received letters from readers who have had experiences similar to Engineer Kraly's. Upon one such occasion the information was relayed to Vice Admiral L. T. DuBose, USN, Chief of Naval Personnel, Department of the Navy, Washington 25, D. C. Admiral DuBose's reply was as printed below.—*Editor.*

"You stated that on several occasions members of your organization who are Naval Reservists have requested transfer of their Reserve commissions to engineering duty categories but that they had been refused on the basis that the Navy presently had sufficient engineering duty personnel to meet its requirements.

"The Bureau of Naval Personnel has denied requests from Naval Reserve officers for transfer from their present officer designator code to a designator code

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NEW LITERATURE

To help the offering firms determine which literature you require, when requesting an item, be sure to list all specifications shown . . . and say you saw it in the AMERICAN ENGINEER.

PHOTOCOPYING—A booklet, "The Apeco Auto-Stat Story" is available from the American Photocopy Equipment Company on how to make photo-copies direct from originals in one compact unit. To receive booklet, fill in and mail coupon which heads Apeco Auto-Stat advertisement on page 3.

—AE—

ELECTRONICS — An electronic supply catalog for 1953 *is now being offered free by Allied Radio Corporation. Containing* 236 *pages, it is said to cover the world's largest stocks of electronic supplies. See offer in Allied Radio Corporation advertisement on page* 5.

—AE—

RECORDS — A catalogue on long-playing records, including all leading labels such as Columbia, Decca, Victor, London, etc., may be had free from Record Haven Stores. Offer in advertisement on page 5.

—AE—

CIRCUIT BREAKERS—A new manual explaining operating principles of basic circuit breaker designs, providing data on factors of application is offered by Heinemann Electric Company, Trenton 2, New Jersey. Included are simplified diagrams showing three basic types of circuit breakers, explanations of temperature factors, inrush current effects, etc.

—AE—

SURFACE COATING — Latest technical information on specifications, formulations and uses of Vinylite Resin VMCH as a surface coating is presented in Technical Release No. 12. Outlines proper methods of selecting and using pigments with regard to reactivity, dispersion, and mixing. Write Don Masson, Bakelite Company, a Div. of Union Carbide and Carbon Corporation, 30 Madison Avenue, New York 17, N. Y.

—AE—

PORTABLE PUMP — Foundation Equipment Corp., 38th Avenue at 10th St., Long Island City, N. Y., manufacturers of well-point systems, offer literature on a new economical 4" Hi-Capacity portable gasoline-engine-driven wellpoint pump, 646. Capacity 1000 *gal. per min., designed to replace larger units where soil permits.*

—AE—

INSULATION—Ultrafine, the new thermal and acoustical insulation made of extremely fine blown glass fibers manufactured by Gustin-Bacon Manufacturing Co. of Kansas City, Mo., is the subject of a four-page, two-color folder now available. Treats physical properties, principal uses, handling characteristics, thermal conductivity and acoustical efficiency.

—AE—

INSULATED PIPE — Durant Insulated Pipe Co., Palo Alto, Calif., has a new bulletin (6c) on D. I. P. Pre-Sealed Insulated Pipe for underground and weather-exposed piping systems conveying hot or cold liquids or gases. Steam pressures up to 1000 *psi. Gives applications, special features, design, construction, fabrication, and specifications.*

—AE—

POWER STEERING—A brochure on the new Air-O-Matic Power Steer Booster describing utilization of compressed air for safer, easier steering of commercial and heavy duty vehicles may be obtained from Air-O-Matic Power Steer Corp., 24 Noble Court, N. W., Cleveland 13, Ohio. Contains installation diagram, specification tables.

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under rigid conditions relative to type of creative person does not work hours and duties or on a standardized basis following a regular pattern. His production is that of the mind and does not depend upon manual skill and dexterity; his effort is predominately intellectual and varied in character and he must have a degree of independence of action and discretion which simply does not apply to production or clerical workers. This does not mean that the professional employee is any better than the others but it does recognize that the same standards do not apply. This fact is recognized by industry, by our educational system and by our government. The Taft-Hartley Act and the Wage-Hour Law are excellent examples of federal legislation which contain provisions recognizing the different conditions and treatment applicable to professional employees."

Court Holds Professional Group May Act Against Unlicensed Practitioner

NSPE Legal Counsel Samuel I. Sacks has called attention to a holding by the Pennsylvania Supreme Court which states the principle that the illegal practice of a profession may be enjoined on the complaint of a duly licensed member of the profession unlawfully so invaded.

The case involved the dentistry profession but would appear to be equally applicable to other professions, including engineering. The action was brought by a group of dentists individually and as members of the local committee on unauthorized practice of dentistry on behalf of the Odontological Society of Western Pennsylvania. The defendant maintained a laboratory where he made artificial dentures and other dental appliances and also performed dental work, but he was not licensed to practice dentistry, according to the complaint.

After being enjoined from further illegal practice in 1943 the defendant was held in contempt of court for continued practice in 1944 and 1952. An appeal was taken to the Supreme Court of Pennsylvania which held that the court had jurisdiction to enjoin the illegal practice of a profession, that the matter could be decided by a court of equity without a jury, and that jurisdiction was invokable upon the complaint of a duly licensed member of the profession affected.

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cial responsibilities and corresponding financial commitments for participating societies; and

"5. The failure to provide for coordinated action on the part of the engineering profession at the state and local levels.

"However, the Board of Directors further directed that it be made clear this action should not be construed as an unwillingness on the part of N.S.P.E. to discuss the unity matter further."

The Exploratory Group finished its work when it submitted its report in December, 1951. The original five members of E.J.C. composed of the Electrical, Civil, Mechanical, Mining and Metallurgical, and Chemical Engineers revised the constitution of E.J.C. as a result of the Exploratory Group's report. This revised constitution has been approved by the original five societies and was adopted December 7, 1952. The revised constitution provides for three major changes and improvements. The voting members of the E.J.C. are now based on the membership of the constituent society. Each society having 15,000 or fewer members is qualified for one representative. Each society having more than 15,000 members is qualified for one representative for each 10,000 members or major fraction thereof. Action may be taken on a two-thirds majority rather than unanimous vote under the old constitution. The qualifications of the various founder societies were investigated and 12 societies qualified for membership and were invited to join the reorganized E.J.C. In addition to the original five members the American Society of Engineering Education and the American Society of Naval Architects and Marine Engineers have now joined the E.J.C. Other societies invited to join were the American Association of Engineers, the National Society of Professional Engineers, Institute of Radio Engineers, the American Society of Heating and Ventilating Engineers, and the American Institute of Aeronautical Sciences.

At the last meeting on January 23, 1953, the seven member societies had representatives present. The American Association of Engineers and the N.S.P.E. had representatives present to observe the meeting. Mr. Shoch and Mr. Allen attended for the N.S.P.E.

It may be seen from this discussion that there has been considerable activity and study at national level on the matter of unifying the engineering profession, but as we stand today there is no real unity organization. There are two organizations which offer some hope from the national standpoint. The N.S.P.E. has all the qualifications except membership for representing the engineering profession. However, with a membership of 16 per cent of the registered engineers and 8 per cent of the practicing engineers they cannot speak for the profession as a whole. The E.J.C. is not generally regarded as the unity organization although the total membership of the constituent societies is large. The E.J.C. is a loose federation of existing societies with limited authority and only indirect ties to the individual engineer. Any member society of E.J.C. may resign from membership upon a ninety-day written notice to the Secretary of E.J.C. The member societies do consider it as a vehicle through which unity may be achieved. Through this organization representatives of the various societies may become better acquainted and find the answer to the unsolved questions and problems which must be resolved before a unity organization can be perfected.

The pot of engineering unity is boiling. At the national level the subject is given top priority. It takes time to revise a constitution and secure the approval of the boards of directors of the constituent societies. This was all accomplished during the year 1952. The E.J.C. now enters into the critical period of formulating plans for a unity organization which will be acceptable to all interested parties. Likewise the N.S.P.E. has a critical decision to make on whether or not it will join the E.J.C. in these plans. Several states have already formed loose federations of engineering societies. The New York State Society met February 6 and 7, 1953, and a panel similar to this one was held at the meeting to discuss unity in the engineering profession.

There is no reason why unity cannot be accomplished at local and state levels in advance of a national decision. The O.S.P.E. is the largest engineering society in the state, with members in substantially all of the major technical societies, and it appears to be the logical organization in Oklahoma to expand its membership, co-operate with the technical societies, and truly represent the engineers of Oklahoma. If this can be established in Oklahoma, it may well set the pattern for national unification through N.S.P.E.

—PP—

Woolrich

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Professional Development to effect a program for the elevation of the professional engineer to new heights of accomplishment? We urge that American industry follow the leadership of some of the associated member companies of the American Society for Engineering Education and revise their salary scales for the advancement and recognition of Engineers to levels commensurate with their professional contributions.

More recently, the Engineers' Joint Council has greatly broadened its base of membership to offer participation by a selected group of additional professional engineering societies. The American Society for Engineering Education has accepted membership within this Council. Past President Thorndike Saville is the appointed representative of the American Society for Engineering Education and in the reorganization of EJC at the session of January 24, Dean Saville was named its Vice-Chairman. He is our spokesman in this expanded program.

THE future of engineering as a profession in North America depends upon the ability of the engineering colleges to advance their education to new levels of professional achievement. The incentive for both students of engineering and the engineering colleges, however, is in the hands of those who direct the progress of the graduates after they leave the college halls.

The answer to either the students of the engineering colleges or to the man who plans to grow is not unionism. The reward for which the professional engineer strives is a composite of full recognition and appreciation for the manpower product of the engineering colleges by those who employ, advise and direct. The compensation should be commensurate with the abilities and contributions of each individual of the profession. It is essential that the salaries for men of accomplishment and years of service shall be an incentive to the men entering the profession.

We need now, positive constructive action in this emergency by our constituted leadership of the engineering profession. The evolving Constitution of our unity organization does not authorize autocratic action so essential in emergencies to the preservation of our national government but we must face this problem of *unionism* vs *full recognition as professional engineers* before the eyes of all Americans with decisiveness and constructive action. It will require an all-togetherness and unanimity of purposefulness to meet the rising trend to legalized mediocrity through collective bargaining. If we, as professional engineers, are as effective in applying the principles of management as we boast, then our unity organization can find the answer without our turning to dictatorial government agencies for a solution.—***End.***

Meeting

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ing strong committees, and desirable State and National assistance.

The national legislative scene was outlined by Legislation Committee head, Clarence Shoch. He explained that a group of engineering societies are working on testimony favoring retention of the professional provisions of the Taft-Hartley act, the law now under consideration in Congress. He also presented a review of the considerations of the problem involving inclusion of self-employed professional engineers under social security. At the Executive Committee meeting on Sunday it was decided that NSPE should favor the inclusion of self-employed engineers on a voluntary basis. Also, it was decided to support the inclusion of State and local employees on a voluntary basis.

Interprofessional relations claimed a lengthy discussion period. Some reported experiences in establishing joint committees with architects and told of joint meetings with doctors, lawyers, accountants, and other professional men. One state reported development of a State Professional Council to act upon problems facing all professions.

Vice President William D. Williams, Chairman of the Ethical Practices Committee, reported on that group's activities. He reviewed studies of the rules of ethical conduct, Engineers' Creed, telephone listings, and the like. A. J. Ryan, Chairman, Employment Practices Committee, conducted discussions in the all important area of unionization of engineers. Professor Joseph Butler, Missouri Society, informed the group of the findings of a special study he has made of this problem.

Before adjournment, NSPE President John D. Coleman, who presided throughout the sessions, called upon all the State Executives to take back to their homes all that they had been able to retain from the discussions.

"It is in this way that these meetings fulfill their purpose. It is in this way that we become a strong and unified Society," the President said.—***End.***

Letters

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concerned with engineering duty. However, factors other than having a sufficiency of specialized engineering officers are brought into consideration. These other factors include the need of the Navy for sea-going officers, personnel ceilings, mobilization requirements, and the failure of such applicants to meet educational, experience, rank, and age standards which have been established by the Bureau of Naval Personnel with the full concurrence of the technical operating bureaus and offices.

"The officer designator code is a four-digit numerical code system which was developed by the Bureau of Naval Personnel to earmark billets and officers—the first three digits being used to identify billets and the fourth digit to identify officers. The system was devised as a result of the Officer Personnel Act of 1947 which requires that certain officers of the Regular Navy be assigned to restricted duty, including engineering duty only. There is no similar restriction on the assignment of Reserve officers. However, in order to obtain statistical and accounting data for mobilization planning and in order to classify Reserve officers into broad administrative categories the system was broadened in 1950 to include Naval Reserve officers. The fact that a Reserve officer may have an engineering designator code is no assurance that he will be assigned solely to engineering duty upon recall to active duty. Conversely, the fact that a Reserve officer does not have an engineering designator code will not preclude him from being assigned engineering duties since most of the billets in the Navy requiring officers with engineering background and experience are not identified as engineering billets.

"All officers' qualifications are reviewed, analyzed, coded and recorded on IBM punched cards in order that upon consideration for recall to active duty in the case of inactive officers or change of duty in the case of active duty officers they will be assigned to the type duty for which they are best qualified and for which the Navy has the most need. These qualification codes reflect education, travel, rank, file number, etc. Experience qualifications are coded in six-digit numbers and as many as five civilian and/or naval experience codes are recorded so that upon assignment to duty the whole of an officer's education and experience is available for consideration.

"I appreciate your interest in the problem of utilization of engineering personnel in the Navy and assure you that the Bureau of Naval Personnel is doing everything possible to obtain maximum utilization of its officer personnel by proper assignment consonant with the needs of the Navy."